The Builder.

VOL. XXIII.—No. 1167.

The Late Sir Joseph Paxton.

THE claims of Sir Joseph Paxton to biographic notice in the pages of the *Builder*, along with architects, would in 1851 have been estimated by our profession as but slight; but time which has moderated some of the pretensions advanced in his behalf, in inflated language, by the newspapers, rather than at all by himself, has permitted of a higher as well as of a more just appreciation by architects, of his abilities in connexion with the pursuit and practice of architecture. Absurdly as he had assigned to him place with Wren for the estimate of posterity, and regrettable as it was to see that misconception of our art, and of the qualifications required for the profession of an architect, which allowed Paxton to be ranked equal with Barry, there is no doubt that he who mainly conceived the effect of the Sydenham nave, deserves a place in the company of architects, if not as one of them. It may be not the highest art-architecture that he brought into use: he may have been entirely wrong in his anticipations,—for, these in common with the public, he seemed to have,—that the "ferro-vitreous," or iron-and-glass, system of architecture would displace every other even, for dwelling-houses; but his merits, we think, well earned the place which we shall accord to him, after due consideration of those which he had and those he had not. It may be considered seemly to follow the custom of saying nothing but what is good of the dead; but it is in our belief better, with a view to real and lasting fame, to leave on record only the particular good that posterity justly can endorse.

Sir Joseph Paxton died at his residence, Rock Hills, near the Crystal Palace, Sydenham, on the 8th inst. He was in his 62nd year. His remains were to be laid in the churchyard of Edensor, near Chatsworth, in Derbyshire, on Thursday, this week. He was born on August 3rd, 1803, at Milton-Bryant, near Woburn, in Bedfordshire, and was the seventh son of William Paxton, yeoman, of that place. He was educated at Woburn Free School. When very young he went to work as a gardener at the seat of Sir Gregory Page Turner, Battlesden, in Bedfordshire, where his elder brother, who is yet living, then was, and where a new mansion designed by Sir Joseph's son-in-law, Mr. George Henry Stokes, architect, is just now being built for Sir Edward Page Turner. Here young Paxton received about 15s., or 16s., a week. Subsequently he was at Kensington, we believe at the gardens of Messrs. Lee & Kennedy. Persons still resident in that neighbourhood call him to mind as making himself generally useful with a wheelbarrow. But he soon got to the Horticultural Gardens, Chiswick, where he and Dr. Lindley, both young men, were resident at the same time. There he attracted the attention of the late Duke of Devonshire. The duke, a great lover of horticulture, arboriculture, and the fine arts, was pleased with Paxton's taste in making up *bouquets* for him, and with his manner of rendering slight services, and became in the habit of inquiring for Paxton whenever he the duke, visited the gardens. Soon afterwards, or when as it appears Paxton was not more than about 24 years of age, there being a vacancy at Chatsworth, the duke invited him there; and he eventually occupied a very important position, not merely as head-gardener, at Chatsworth, but as an adviser of the duke in the most important affairs connected with his several estates. About the time of his removal, or in the year 1827, he married the third daughter of Mr. Thomas Bown, of Hurst-Bridge House, Matlock, Derbyshire. Though there were a land-steward and a house-steward at Chatsworth, the present writer recollects, about the year 1838, or when Paxton would have been with the duke about eleven years, and would be about 35 years of age, hearing him spoken of by one who was in the best position for knowing, as the man who above all others had the duke's confidence: in fact, it was said that *he* could "do anything with the duke." At that time the great conservatory was in progress. It was built to contain large palm-trees, and was regarded as a wonder of horticultural-building; in which however it was not Paxton's first essay, on the estate, any more than was it the first progenitor of the building of 1851,—though sometimes it has been thus regarded.

Mr. Paxton became the duke's house-steward in the year 1840.

During the period of the building of the conservatory, he resided with his family in a large house near to the extensive gardens and forcing-houses, which are in the park, at some little distance from Chatsworth House itself. Attached to the latter are other gardens and grounds, and an arboretum, as well as cascades, fountains, and "temples," dating probably from the time of the building of the original portion of the house, a fine Italian work by Talman. These waterworks of course suggested those of Sydenham. In one place the water flows down a long and steep flight of steps from a "temple" at the summit. This cascade, and all the architectural features connected with it, are better in character, though on a smaller scale, than the cascades and "water-temples" at Sydenham. About the time we speak of, Sir Jeffry Wyattville had just completed his extensive additions to, and modifications of, the original house. They included galleries for the extensive collections of sculpture, and other works of art, which the duke had brought together, chiefly from Italy, and also a very effective feature of the exterior, a terrace-garden, with its flower-beds in geometric patterns, and with balustrading and other architectural accessories. His position with the duke obviously led him to take the greatest interest in all these architectural works and fine-art collections. In fact, without the Duke of Devonshire, and the lesson of Chatsworth, there would have been no Crystal Palace at Sydenham. The arrangements at the latter building, indeed, for the disposition of sculpture, as designed, may be considered a step in advance of those at Chatsworth,—albeit *sculptors* are not universally of opinion that their works are best placed with foliage and flowers as accessories or background. Paxton, however, was of that opinion; and to be convinced that he was right, nothing more would be required, we think, than a visit to the Chatsworth sculpture-gallery, stocked though it be with the finest of Canova's works, after having seen the arrangement of the sculpture in a garden, as ordinarily at the Exposition in Paris, at the Palais de l'Industrie; which method adopted was of later date than the Crystal Palace, and was probably suggested by the disposition of the works in the latter building. Sir Edward Bulwer Lytton, in one of his novels, has some apt remarks on the inferior effect of sculpture in galleries exclusively devoted to it, to that of sculpture placed in libraries, or with the furniture of ordinary apartments.

The duke's taste for horticulture must have been of the greatest service to Paxton in furnishing him with means of rendering himself famous in that branch of his acquirements. To do justice to his services to horticulture and botany,—and, we must add, cottage-gardening,—would require a distinct article, which may perhaps be looked for more fittingly in one of the periodicals devoted to those subjects, than in the pages of a journal like our own,—even not forgetting that landscape-gardening is truly an art with which the architect must be acquainted, and a matter which is not merely important to the effect of a building, but almost to be regarded as essential thereto. But we ought to mention as amongst his literary works, a "Treatise on the Cultivation of the Dahlia," in 1838; and amongst others, or to which his name has been attached as editor, the "Magazine of Botany," commenced in 1840, and of which the sixteenth and last volume appeared in 1852; "The Flower Garden," with the joint editorship of Dr. Lindley, commenced in 1851, and brought to an end in 1853; the "Botanical Dictionary," of which there have been several editions, the latest in 1853; the "Horticultural Register," and the "Cottager's Calendar." There was considerable resemblance between the subjects of Paxton's attention, and those to which Loudon devoted himself; though the literary works of the latter must be considered of much greater importance to the architect specially than were Paxton's. Paxton's name however is more likely than Loudon's, to remain identified with important designs that were actually carried into effect. Neither can be said to have gone much nearer to the professional ideal of the true artist-architect, than may be comprised in the appreciation and skilful direction of the abilities of others; but both had great knowledge of, or aptitude in, matters of construction.

It is difficult for the architect who has gone through a regular course of pupilage, and whose comprehension of the requirements of study is now expanding every day, and who would fain reach the inevitable speciality of practice only subsequently to his grasp of the widest area of attainments, to realize to himself the possibility of approaching the profession of an architect by way of the practice, empirically in many cases, of the speciality. The fact however is that structures required for horticultural purposes are produced chiefly under the direction of gardeners; moreover, many of those who, not being landscape-gardeners, have no claim to rank as artists, acquire great skill in contrivance of the buildings that often happen to be connected in position with conservatories; which last, themselves indeed, require the exercise of much ingenuity in their mechanical appliances. In Paxton's case, the ingenuity must have been peculiarly called for by the variety, as well as the extent, of the horticultural buildings that were under his care. The duke seems to have collected plants from every quarter of the globe; and the gardener had to provide each with its fitting domicile. One of these plants, now almost to be regarded as naturalized, was the Victoria Regia. It is impossible to omit mention of it, even in a biography addressed chiefly to persons interested in architecture; and the study of the plant, no less than the provision of its place of abode, really belonged to the gestation of the Exhibition building itself. Paxton was proud of his success with the Victoria Regia, which first flowered in 1849. In the paper descriptive of his design for the Exhibition building, read at the Society of Arts on November 13, 1850, he exhibited a leaf of the plant, 5 ft. in diameter, and the growth of five days. He pointed out that the underside of the leaf was a beautiful example of "natural engineering," in the "cantilevers" radiating from the centre, where they were nearly 2 in. deep, "with large bottom flanges and very

thin middle ribs, and with cross-girders between each pair to keep the middle ribs from buckling," their depth gradually decreasing towards the circumference, where they also ramified. This, at least, was observation of the character fitted to form an architect, and might be compared in truth with that of Wren, of the shell whose strengthening newel kept unharmed its form when dashed against the rocks, and suggested to the great architect, as Cockerell loved to tell, the arrangement of the spire of St. Bride's.

Paxton arrived at the solution of each question, on the Baconian principle, that is, by the way of experiment. The experiments may be said to have commenced immediately upon his arrival at Chatsworth; and whatever the value, architecturally, of the building of 1851, they should be mentioned as having led up to it, and thus conduced to the success of the Exhibition of that year. They were begun in the year 1828. The pine-house, built in 1833, was the first in which the ridge-and-furrow roof was employed. In that case, the roof was contrived on the system of numerous short spans, the ridges and valleys transverse to the longitudinal axis of the plan; whilst the valleys or rafters were inclined. The object of all was that the glass might be more nearly at right angles to the slanting and weak, though valuable, rays of the morning and evening sun, than that in the "lean-to," or simple double-slope roofs. This was followed by a greenhouse in 1834, and a "curvilinear" hothouse in 1836. In this last, the Victoria Regia first bloomed, or fifteen years later. The great conservatory was commenced in 1837. In 1840, in a conservatory at Darley Dale, Mr. Paxton first employed the ridge-and-furrow-roof with the spans on a level, that is, with the ribs, valleys, or gutters, neither curvilinear nor inclined as in the former cases, but borne horizontally by an arrangement of trussing to them. The proprietor of the building wrote in 1850 to Mr. Paxton, saying that he used this conservatory as his family sitting-room. Then followed the new Victoria Regia house, spoken of, in 1850, as a perfect type, on a small scale, of the Exhibition building. In the last or greatly magnified work, it must be recollected that the lines of the valleys, or gutters, were parallel with, instead of transverse to, the longitudinal axis of the building: thus their ends had to be carried by cross-girders, which were themselves carried by the columns. Upon the cross-girders were large trough-gutters.

This statement of particulars of the growth of the ridge-and-furrow method of roofing, which was a main feature of the building of 1851, is derived from the paper before referred to; but there have been other claimants to priority of authorship of that system, and also as regards the "Paxton-gutter," of which more has to be said. What there is less immediate difficulty about, is in according to Paxton the merit of the invention of a particular machine for making sash-bars, which was of the greatest service in the rapid achievement of the building of 1851. This machine had been the subject of communications by him, to the Society of Arts, in March, 1840, and was rewarded with their silver medal. The invention was made during the construction of the great conservatory at Chatsworth, with a view to abridging the amount of labour in sash-bars, that would have been required. In the first state, the machine was merely one for grooving; but it was afterwards improved so as to make the bar complete. It saved the labour of twenty men for one year, or an amount of about 1,200*l.*; and the length of bars made by it was about 40 miles. In the improved form, the machine was first used in August, 1838. The sash-bars in the conservatory were precisely similar to those in the Exhibition building; that is to say, they had grooves sunk at the sides, so that glass and bars would have to be fixed alternately, instead of in the way of bedding the glass upon the bars after the latter had been all laid.

We now approach the period of Paxton's association with the chief feature of the display of 1851. It is important that the origin and nature of the connexion should be distinctly stated. A new generation has sprung up since the year of the first Great International Exhibition; and even at the time, facts were so much distorted, that what they really were was known to few persons amongst the general public. From 1851 to the present time, nothing has appeared more clear to those whose conclusions are simply whatever happen to be those of the newspapers, than that the whole combined architectural and engineering profession failed to solve a problem duly presented; and that it thus brought the undertaking to the verge of failure. Without diminishing the credit due to Sir Joseph Paxton, we have to oppose to these notions "the inexorable logic of facts." And we may observe in passing, that whilst it is admitted that professions are apt to get into the state of requiring the valuable contributions which they receive from without, it is none the less exceedingly unsafe to prefer, as to a large extent the public seem to do, the man who has not had, to the man who has had, the education and training for the particular profession, be it medicine, engineering, or architecture. If Paxton's attainments were those of an architect or engineer, surely to him should be attached some share of the blame, if there were any anywhere applicable, for not having come forward before the danger of shipwreck was felt. If they were not such attainments, and yet were those required at the juncture, then certain writers, who would represent the public, are called upon to show this curious position, to wit that the best mode of arriving at skill in a profession is not to acquire the special knowledge for it. Paxton's sagacity in matters of engineering was considerable; he was quite competent to originate most ingenious contrivances; and he had an intuitive perception of what would be good construction; still, his attainments fell short of those of an architect or engineer; and he could not, as we believe (even given his previous experience in that class of buildings), have accomplished an enduring work in the form of the building of 1851, or even the building as it was, without the aid of the architects and engineers who ably co-operated,—or rather, who took the entire work into their hands. As regards the Sydenham building, however, he appears to have maintained a much more important position; everything was directed by or submitted to him; and, in particular, the construction of the principal-ribs, by which the arched form of roof, the whole length of the nave, as well as to each of the transepts, became possible, without external buttresses, was his idea; though there was assistance from others in the drawings, calculations, and supervision.

But as to the building of 1851, points brought out in the discussion at the Institution of Civil Engineers, in January of that year, after Mr. M. Digby Wyatt's paper on the construction of the building, should not be forgotten; and there is no reason to doubt that the representations then made, led to the extra strength given to the structure in certain places, as well as that the additions were required. In "The Practical Mechanic's Journal Record of the Great Exhibition, 1862," Mr. R. Mallet has gone very carefully into the question of the sufficiency of the method of construction in the building of 1851, and in the Crystal Palace, Sydenham. In the former building he had found, on a summer's day, certain columns two inches "out of plumb" in the first range in height only; he shows the uselessness of the wooden keys and wedges for the objects for which they were introduced; he reminds us that M. Barrault found the expansion in the building of the Palais de l'Industrie sufficient to fracture glass and produce leakage; and lastly, he comes to the question of the effect of wind, which had been the subject of some important remarks by the Astronomer Royal. He says that, fortunately, during the whole period of the existence of the original building, London was not visited with a single really severe gale. At Sydenham, the building has greatly increased stability, in the major portion of it at least; and, from 1851 to the time of his writing, he says, "London has never been visited by one of those 'first-class' tornadoes that about twice in a century sweep over our temperate regions." Yet he observes that a wing representing best the construction of 1851, has been blown down; and he predicts that, "should London ever be visited with such a cyclone as that which swept over a large portion of these islands in 1839," and the storm strike "broadside on" upon the Sydenham building, "strengthened though it is, its towering beauty and precious contents will but too probably be left one commingled mass of ruin and rubbish." Thus he comes to the conclusion that "the unbroken columnar and girder structure is neither safe nor durable."

Such conclusions, not confined to Mr. Mallet, it is strictly just to mention, in order that there may be a right estimate of the merits of the *ferro-vitreous* system of construction, or "architecture," or that variety of it to which, as exhibited in the Hyde Park and Sydenham buildings, the name of Paxton has been attached. We resume our narrative, which has been already anticipated in parts.

In the course of the elaborate preparations for the Exhibition of 1851, there was one matter, that of the building, that was too long left uncommenced. We suppose every difficulty was expected to be overcome through those who were at first the contractors for everything, the Messrs. Munday; but due warning was given that there would be by no means superabundance of time. The Royal Commission itself was not appointed till January 1850. Sir Charles (then Mr.) Barry was upon it, as was the president of the Institution of Civil Engineers, but not the president of the Institute of Architects. Mr. Richard Turner, who constructed the conservatory at Kew, had previously exhibited a model of a structure which he suggested, and which was designed by his son, Mr. T. Turner, an architect. The main building, in the design, was described in the *Builder* of January 26th, 1850, as "in truth, an enormous greenhouse, 1,020 ft. long," and having five domes of iron and glass. It was proposed to be a permanent structure, eventually to be used for concerts, "winter-garden," and the like purposes. In February, 1850, it was said by us:—"Arrangements should be immediately come to as to the building; there is not a week to spare." The Commissioners then were expecting the building to be completed by the 1st of January, 1851. In the beginning of February, 1850, however, a committee for matters connected with the intended building had been appointed. It consisted of the Duke of Buccleuch, the Earl of Ellesmere, Messrs. Barry, Cockerell, and Donaldson, architects; and Messrs. Cubitt, Stephenson, and Brunel, engineers. Early in March, they took what at least is a common course with committees similarly placed, and desiring not to show favour. They issued an invitation for suggestions to be sent to them; and though they offered no pecuniary reward, the usual result followed: they were responded to sufficiently to find their judgment troubled by number of the projects sent. Could the eminent professional men on the Committee have gone to work themselves, they would probably have adopted the right course. As might have been expected, and as indeed they themselves seemed to have contemplated as possible, they in effect rejected all the suggestions; and they proceeded to the preparation of a design of their own.

It may be well to observe that their original paper of particulars contained a careful statement of rules and conditions, and general requirements. Attention was directed to distribution of parts, mode of access, and internal arrangements and contrivances, as going to constitute the convenience and fitness of such a building as that to be erected on the site which by this time had been pointed out in Hyde Park. The conditions included one for fire-proof construction; and amongst the requirements were "means of classification," or according with the four divisions, or sections, that had been determined upon. Each of the stipulations ultimately was sacrificed; and a building was erected into which wood largely entered, and one which left classification entirely to the arrangement of stalls and fittings.

Designs, in number two hundred and forty, according to Mr. Wyatt, were received about the first week of April. An exhibition at the Institution of Civil Engineers, shortly afterwards, showed, as we well recollect, that the aim at classification had operated largely in giving the character to designs. Some of the plans proceeded upon the datum of stalls arranged parallel with one another, and with transverse passages at considerable distances; others made the stalls radiating: other plans showed four distinct buildings; and some had these buildings in parallel lines, with interspaces. There were designs that might have suggested the glass-case or conservatory method of meeting the requirements, and others the railway-shed method. The committee could make no use of the designs, after awarding "honourable mentions," further than in arriving, with the aid of them, at certain views, which in June they sought to embody in the design of their own.

Amongst these views were the "advisability" of constructing the building, "as far as possible, in such a form as to be available, with least sacrifice of labour and material, for other pur-

poses, so soon as its original one shall have been fulfilled, thus insuring a minimum of cost." And it would appear from the description of construction adopted, that they contemplated a permanent building. One of the "points of excellence" which they explained themselves as endeavouring to attain, was "some striking feature" to exemplify the state of the science of construction; and this was to be attained by a dome of 200 ft. in diameter. Here, it was thought, Mr. Brunel had been at work; and on one occasion subsequently, he spoke of the whole design as his. There was no engineer for whose talents architects, his contemporaries, had greater admiration; there was none whose grandiosity of character and practice, they would have been less in the position, or less disposed, to imitate. We cannot say much for the dome; but the plan, besides having special reference to the intended classification, had the stalls or cases distinctly marked as to be placed all at right angles to a central passage. It is evident that some consideration of the arrangement of stalls, would have tended to facilitate ultimately examination of the articles and works displayed. In fact, the committee had been right on several important points. Time, however, had so much advanced by the beginning of July, that it became evident that brick walls, which the committee proposed, were a mistake. An outcry was raised against placing the building in Hyde Park; and about the same time, many persons were determined rather to sacrifice the whole undertaking, than to allow one of the few trees which there were in that part of the park where the building was to stand, to be cut down.

The Committee had on the 12th of June invited tenders for their design; and several were received on the 10th of July. It was the original intention of the Committee when they asked for the suggestions from architects, to invite by *a second public notice*, more precise designs accompanied by tenders. But their subsequent course in making a design themselves, and issuing the data upon which tenders could be based, and for which materials they charged five guineas to each person, did away with the first expressed intention. Yet, when inviting the tenders for their own matured design, they intimated that "Tenders for methods of construction other than those shown upon the drawings, and described in the specifications, would be entertained, but on condition only of their being accompanied by working-drawings and specifications, and fully-priced bills of quantities." This seemed to involve injustice to those who had originally been induced to submit designs. We shall see in the sequel, how the curious posture of affairs was attained. Any competent person, after study of the 240 suggestions, and examination of the design of the Committee, might have been in a position to produce, if not one intrinsically better, one more exactly hitting requirements of the moment. The apparent intention, as said in the *Builder* at the time, was not that designers should again enter the field, but that practical men should be able to suggest ways of doing the same thing cheaper and better than the methods shown on the drawings. However, one of the tenders, that of Messrs. Fox & Henderson, was accompanied by an entirely fresh design, which had been made by Mr. Paxton. It was immediately caught at, as means quite at hand for escaping from a difficulty. It differed considerably from the design that was ultimately carried into effect; though in each, the idea was the simple inclosing and covering the objects exhibited, in a completely lighted case,—the arrangement of the objects and the circulation of the crowds, being left to hazard, or the chances of the contending claims of exhibitors. We have adverted to the fact that more than one suggestion of the green-house sort of building had been previously made. In April, in the *Westminster and Foreign Quarterly Review*, Mr. W. B. Adams had written, that the structure should be like "a great metropolitan conservatory, the materials of which should be chiefly iron and glass," and that the building should be permanent for purposes of "a conservatory and winter-garden." The real merit of Paxton's suggestion consisted in its being accompanied by proof of the success, for certain purposes, of the methods of construction to which we have referred as adopted at Chatsworth, and which Mr. Donaldson went to examine, and in the applicability of all the resources of machinery. A view of the exterior, which appeared in the *Illustrated London News* about this time, shows that the original design consisted of three stories, each upper one set-in from the sides, and the end-elevations taking the character of a pyramid of three steps. The description showed that the trees, if not removed, were to pass through the glass. The idea of fire-proof construction was so far abandoned, that the whole of the roofing and guttering, a considerable portion of the upright encasement, many of the supports, and portions of the trellis-girders, were eventually of wood.

Immediately upon the acceptance of Mr. Paxton's suggestions, the design underwent considerable modifications. The most important of these was the addition of the transept, and lastly of the arched roof to that part of the building. There was considerable difficulty at the time, in settling to whom should be ascribed the credit of what was certainly a very fine feature of the internal effect. Mr. Henderson was said to have had some hand in it, and Mr. Barry also, at least as to the roof. Mr. Barry was largely concerned in a modification of the details, which was made with a view to some decorative effect therefrom. The transept grew partly from the desire of breaking the length of the building, and partly from that of preserving the larger trees, since gone. However, the arched roof itself was claimed for Paxton, by his friends, when the Exhibition was open; and upon a sheet of blotting-paper, framed, and exhibited in the Stationery Court, the visitor was told to see the first conception of the whole design, and the delineation of the arched form as part thereof. We must say that the sketch was so exceedingly vague, that it was difficult to make much of it: still there was something like the end of a semicircular roof. There is more to say, however, than can be given in one article.

THE GOLDEN AND IMMUTABLE MEAN, THE MEASURE OF THE SCIENTIFIC IDEAL OF THE GOOD AND THE BEAUTIFUL.

"There is a *mean* in all things, and a certain measure wherein the good and beautiful consist, and out of which they never can depart."—*Dryden.*

THE following outline of a science of formative ethics had its origin in an early desire to establish the principles of taste on a scientific basis; but the inquiry, which was at first limited to a special branch of study, gradually extended to a survey of the whole phenomena of the solar system; and it can hardly be too forcibly impressed upon the attention of the student of nature that there is scarcely any phenomenon which can be fully and completely explained without a union of several, perhaps of all the sciences. The great phenomena of astronomy, perhaps, may be considered exceptions; but this is merely because the scale is so vast, and those agents whose sphere of action is limited to a more immediate perception by sense, become merged into oneness by the vast distance. Hence it is hardly possible to arrive at the knowledge of a law of any degree of generality in any branch of science but immediately furnishes us with a means of extending our knowledge of innumerable others, the most remote from the point we set out from; so that, when once embarked in any physical research, it is impossible for any one to predict where it may ultimately lead him.

The objects of my former and present lectures are, to demonstrate that the fundamental form of phenomena is quantitative; to prove, by the testimony of the most eminent mathematicians and astronomers, that the mean sometimes called the golden is the immutable law of rectitude in the solar system, and, consequently, the metrical expression of the scientific ideal of the good and the beautiful. To expound the great remedial, curative principle, the law of compensation, by which the divinely appointed mean of well-being is preserved, by which erring nature is rectified and restored to its moral form;* to found upon the premises of the immutable mean and the law of compensation, a formative science by which man and all being under his dominion may be conformed to the standard of rectitude.

The comprehension of the Divine purpose revealed by phenomena is the comprehension of art in its widest signification,—of that Will by which faith, science, politics, social life, the pen, the pencil, and the chisel minister, either consciously or unconsciously, to one appointed end. The theory of the Divine governance of nature set forth in formative ethics is founded upon the evidence of science. Truths, common to what at first sight appear independent and disconnected branches of inquiry, have been appropriated and systematized, revealing in the process dominant principles of such sublime simplicity, that the mind rests satisfied that it has discerned the truth.

The progress of science and art is always from the vague and complex, to the definite and simple; astrology and alchemy gradually grew to be astronomy and chemistry; the multiplicity of incident and minuteness of detail of the early painters gave place to the simplicity of conception and treatment of maturer intellects. But, to the growing, I will not say dull mental constitution, with its vague expectations and aspirations, this ultimate simplicity of science and art is unsatisfactory and disappointing; it looks for something more recondite and complex, and often spurns the truth which lies at its very feet. For men are born intellectually blind, and have to stumble and whine in the mazes of confusion, complication, and misconception, before their mind's eyes are permitted to behold nature simplified by the full light of truth. It is for these reasons that the intellectual cost of destroying fallacies and expounding nature is so often undervalued, and that the Columbus of a new world of ideas is frequently neglected and unthanked; for, the work once accomplished, appears to have been of such easy attainment, that every one supposes he might have done the same.

It is many years since the theory of formative ethics was conceived. Its verification and elaboration have at times interfered with and prevented an undivided attention to my profession, but the labour has been a pleasant one. If with a very common weakness I over-estimate its importance, you will know what deductions to make on this account. But sincerely believing as I do my subject to be a most important one, I venture to predict that when what is now attempted shall be perfected, and raised to the dignity of a science, and becomes a part of elementary education, the energies of mankind, no longer dissipated by vague philosophies, will be concentrated upon the practical duties of life; for it will be perceived that the immutable mean is the ultimate term of scientific inquiry beyond which lies the region of faith. When it is seen, too, that the law of rectitude is eternally fixed—must ever remain intact in the aggregate, though nature be convulsed to the utmost by error,—it will be an important and abiding testimony to creative design; and, being capable of mathematical demonstration, will be accepted wherever reason dawns as the basis of moral science and goal of human progress. Moreover, when the science of formative ethics, founded on the premise of the immutable mean, shall be discerned to be in harmony with, and recognised by, Christianity,* it will prove no unimportant means, not only of re-forming, but of increasing the power, and extending the bounds of Christendom.

In my introductory lecture last season, I endeavoured to show that the subtle ambiguity of words is one of the great barriers to unity of thought. That the word "truth," for instance, constantly thwarts just conclusions by gliding imperceptibly from one of its significations to another; and that the imposing, and at first thought, perplexing question,—what is truth? is in a great measure divested of its obscurity, and the gate to its solution opened so soon as what is really meant is correctly expressed. The question should be,—not what is truth? but—what is right in nature? for all the incidents of being are as facts, truths; but being also, as facts, either right or wrong, it is the province and highest aim of science to determine the law of rectitude. For to know this law is to know the law of highest generality, the supreme law; the law of God manifest in nature, which is the basis of moral science; the law which gives true critical powers of discrimination, a forecast of the future, in brief wisdom! I endeavoured to show that this law, ascertained and enunciated, is the criterion by which the aberrations of nature may be estimated and rectified: hence

* "The antique world, in his first flow'ring youth,
Found no defect in his Creator's grace,
But with glad thankes, and unreproved truth,
The gifts of soveraine bounty did embrace;
Like angel's life was then men's happy race:
But later age's pride, like corn-fed steed,
Abused her plenty and fat swolne encrease
To all licentious lust and gan *exceed*
The measure of her meane and natural first need."
Faerie Queene, canto vii., s. 16.

* "Let your moderation be known unto all men."
"He that striveth for the mastery is temperate in all things."
"Be not excessive towards any."

the Old and New Testaments, comprehending such a law, predict a new earth, a world conformed and restored by moral ideas and forces to its moral form. I then touched upon the nature of scientific progress, and pointed out the fact that it is always towards the exactness of numerical statement, and that man can produce no effect upon nature, can fully appropriate none of her powers, if he be not conversant with general relations according to measure and number;* that this must necessarily be the case if the fundamental form of sensation be force in space and time, if the fundamental form of phenomena be quantitative,† which are demonstrable truths; that upon this theory all sciences will ultimately be considered branches of metronomy, and all phenomenal differences as definite proportional differences, having corresponding metrical expressions,—consequences which are necessarily dependent not only on these facts, but the popular hypothesis, that heat, light, electricity, &c., the imponderables, as they are called, are only modes of motion.

Having decided the exact quantitative statement of the law of rectitude to be the most important object of scientific attainment, the calculations of the most eminent mathematicians and astronomers were interrogated with reference to the planetary law of rectitude, for the law of rectitude in the larger phenomena of nature. Their evidence on this point, which was then cited at some considerable length, may be briefly recapitulated, viz.:—That, notwithstanding all the variations, fluctuations, or aberrations which can possibly take place in the solar system, the general balance of its parts will always be preserved, and every departure from a mean state periodically compensated; that all the changes which the mutual action of the planets on each other can produce are periodical,—that is to say, increasing to a certain extent, and that never a very great one; and then again decreasing, so that the system can never be destroyed or subverted by the mutual action of its parts, but keeps constantly oscillating, as it were, round a certain mean state from which it can never deviate to any ruinous extent. The researches of Laplace and Lagrange in particular have demonstrated the *absolute immutability* of the *mean* distance of each planet from the sun, and, consequently, of its periodic time.‡ Here, then, was glorious testimony drawn from the depths of space to the law of rectitude reigning in the solar system, an astronomical revelation of the law we sought, of that immutable mean against which all the powers of aberration will never prevail; and whoever may hitherto have been tossed to and fro by the unstable waves of opinion, may here grasp a principle of certitude, the immovable rock and foundation of moral science. For could any principle but that of rectitude be unchangeably, eternally fixed?

It is a remarkable circumstance, and some slight collateral testimony to the truth of the theory I am expounding, that the records of astronomy were searched with a presentiment of the laws they would disclose, as by a careful study of phenomena more immediately my province, and of the limits of the variation of ratios, I believed I had detected a universal moral law presiding over the near and the remote terrestrial and planetary phenomena, viz., that every aberration from a mean state of any system of being must be compensated at some time or other by one of an equal but opposite kind, *i.e.*, in excess by one in defect, § and *vice versâ*, or that system will remain permanently injured and unbalanced. This is precisely the law of compensation by which the mean of the planetary system is maintained, a principle which was at first surmised was found to be abundantly confirmed by facts gathered from a variety of sources, astronomical, metereological, political, ethical, æsthetical; from man's physical nature, animal and vegetable life. If the mean, then, be the ordained immutable measure of well-being in nature, as the cumulative evidence from all these various sources confirms, it must be the measure of ideal rectitude, of the good* and the beautiful.

It may now perhaps be perceived how phenomena apparently the most remote are linked together by a common quantitative basis and the same general laws; how everything that is right in the planetary system, in the conduct of life or in art, must be in conformity to the same immutable moral principle; and that all aberrations or departures from the divinely-established mean or mid-point of rectitude must be rectified or compensated by the same means. This enables us to comprehend the inevitable penalties of extreme action, the necessary reaction, the fitful oscillations which the eternal principle of right in nature demands till compensation be effected; and that it is the duty of man as a responsible agent to avoid and prevent to his utmost departures from the golden mean.

The mean, then, being the quantitative expression of rectitude in the solar system, is also the expression of the ultimate term of natural development, that desirable state in which the ideally good and beautiful will be realised; and, to judge from the past history of the system, the geology of this planet, and the history of the human race, there are abundant evidences that the perturbations, fluctuations, aberrations, or, in other words, the convulsions of nature, are becoming less and less, and that the whole progress of being is towards this balanced mean state. All our sources of evidence, then, unmistakeably point one way, and proclaim the object of the Creator's formative design, which we, as stewards and doers of His will, are bound to promote in the development of the earth, of its animate being; above all, in the formation of man, intellectually and physically: this is the key to the conception and design of a science of formative ethics. And in observing that nature in its largest physical aspects is being moulded to rectitude by an unseen will and power, we are naturally led to look forward through the vista of the future to a period in the history of man, when, from a universal perception of the purpose of the divine will, the moral intellect will have conformed and moulded the human body to rectitude,—to a period when beauty will be reunited to goodness. I am aware that this part of my theory, viz., that goodness rectifies the body, does appear, on a superficial glance, to be negatived by the facts of every-day experience. It has been said, indeed, in reference to my views on this subject, "that I have to deal with an ugly saint; that the plainest looking men in England were lately three persons most conspicuous for every kind of excellence, moral, intellectual, and religious;" how then would my theory "account for such a singular phenomenon?" Nevertheless, I believe I can perfectly reconcile this fact to the theory, for it should be recollected, that excessive and defective exercise of the intellectual or physical powers and functions are the two great deforming influences. Now the present imperfect state of society, with its ignorance upon many subjects necessary to its improvement, often exacts the devotion and extreme mental exercise of good men to develope truths of the utmost importance to its future well-being. Thus it is that the physical beauty of the best and wisest men is often marred, and their more perfect natures sacrificed, for the ultimate benefit and redemption, in some form or other, of the human race. But notwithstanding the deep wounds and scars of thought which score their features, those ponderous brows and sunken eyes, the bent shoulders and ill-compacted limbs, which sometimes mar the external aspect of great and good men, it is ugliness very different from that of thousands in our gaols, which is ungraced, unsunned by goodness. But this part of the subject will receive ampler investigation in another place; meantime, however, as a preparative for the full acceptance of the theory advocated, take up the converse position, or that moral goodness tends to deform and degrade physical nature in the aggregate, and see whether this hypothesis commends itself to your understandings.

You will perhaps exclaim, "This immutable mean, of which so much is made, is recognised by everybody in trite and commonplace proverbs; it is as old!" You are right: it is and has been acknowledged under the familiar appellation of the golden mean by millions of the human race. You are right, too, that "It is as old!" Shall I finish your sentence?—as nature, as time. It is set forth in the Proverbs of Solomon; it is the *natural* basis of ethics recognised by Christianity. Under the title of "immutable" it was the great doctrine of Confucius; it was recognised in an aphorism of Thales; it is the basis of Aristotle's ethics; it has been deeply graven and enshrined in verse by the great classic poets, and more recently by Spenser,* Shakspeare, Dryden, and Pope. But, except in the Scriptures, it has and could have had acceptance but in a very limited sense; for those observations and calculations which put its truth and universality beyond guess and surmise, are but of yesterday. In fact, the yet numerous objectors to the mean being the principle of beauty, and the few who can be found to grasp the theory logically dependent upon the central premise, leads me to believe that the mean has been, and is, popularly recognised only through that hazy dawn with which all great truths rise on the understanding. Indeed, a high authority in art has, within a few years, dismissed in one of his works the *mean* as the principle of beauty as absurd, because, if true, beauty would then be the average of deformity; but this is no greater absurdity than that truth is evolved from averages of error, which is unquestionably true, in confirmation of which we have the greatest scientific to set against artistic authority. The following quotation is from a well-known treatise on astronomy: "The quantitative or exact method pursued by modern science is pre-eminently distinguished by the attainment and correction of mean values. The useful and valuable property of *the average* of a great many observations, that it brings us *nearer the truth* than any single observation can be relied on as doing, renders it the most constant resource *in all inquiries where accuracy is desired*. And it is surprising what a rapid effect in equalising fluctuations and destroying deviations, a moderate multiplication of observations has." Thus in obtaining the average proportions of any race or species of living being, the opposite deformities in excess and defect (fluctuations and deviations) neutralize each other, and yield the mean average or standard proportions of the race or species; otherwise it would inhere in excess or defect, which is absurd. And here I should desire to impress a very important consideration, viz., that the theory of the mean being the measure of perfection and beauty is the theory of probability, which ought to have acceptance in the absence of direct testimony, unless it be more reasonable to put out our lamp because we have not the light of the sun; and the great diversity of opinion existing on the subject shows that there is no popularly-recognised ground of certitude, no recognised doctrine. But when the testimony of the most eminent mathematicians and astronomers, above all of the Scriptures, is brought to bear witness to the mean being the immutable or governing law of creative being, we have the certainty and sunlight desired, and the theory is no longer probably but certainly true.†

W. CAVE THOMAS.

---

* "Measure is that which perfecteth all things, because everything is for some end; neither can that thing be available to any end which is not proportionate thereunto; and to proportion excesses as well as defects are opposite."—*Hooker.*

† This has recently been announced as the secret of Hegel.

‡ . . . . . "Tempering goodly well
Their contrary dislike with loved means,
Did place them all in order, and compell
To keep themselves within their sundry reigns,
Together link'd with adamantine chains."
Spenser.

§ "So every scope turn'd to immoderate use,
Turns to restraint."—*Shakespeare.*

* Goodness answers to the theological virtue Charity, and admits of no excess but error: the desire of power in excess caused the angels to fall; the desire of knowledge in excess caused man to fall; but in charity there is no excess, neither can angel or man come in danger by it.—*Bacon.*

† The quantitative theory was illustrated by an instrument which the lecturer has designed, and entitled "The Balance of Nature," upon which he promises at some future time to demonstrate the theory of harmonic ratios applicable to the fine arts.

BAMBOROUGH CHURCH.

THE recent death of the venerable father of Grace Darling, and his burial by the side of his brave and tender-hearted daughter, has caused Bamborough Church to be brought prominently into notice. As it is a fabric of more than average architectural interest, and misleadingly described in the local gazetteer as "a plain neat edifice, dedicated to St. Aidan," and in the

* "But Temperaunce, said he, with golden squire
Betwixt them both can measure out a *meane;*
Neither to melt in pleasure's whott desyre,
Nor frye in hartlesse grief and doleful tene;
Thrice happy man, who fares them both attweene!"
Faërie Queene, b. ii., c. 1, s. 58.

"Love moderately, long love doth so:
Too fast arrives, as tardy as too slow."—*Shakspeare.*

"Austerity severe and cold,
Or wild excess,
Wine voluptuous quaff'd from gold,
Not happiness.
They true enjoyment find alone
Who steer between
A torrid and a frigid zone,
A temperate mean,
Avoid extremes, and shun the fault of such
Who still are pleased too little or too much."—*Pope.*

Daily Telegraph as a "little village church," we give a few details. It is a large Transitional cruciform church, built at that period when the Early English style was being developed into the Decorated, standing in a spacious, grassy, but bleak, churchyard, on an elevated site removed by the length of the village from the seashore, having north and south aisles to the nave, and a low square tower at the west end. From the church to the famous castle, or to the shore, down the wide, gravel-pathed, scrupulously clean and neat village of small houses and one-storied cottages, built on either side of a long piece of ground thickly planted with young trees, the distance is about that of four long stonethrows. Standing in the churchyard, you look up to the castle on the stupendous rock at the other extremity of the village as you would look up to the clouds; and the church, compared with the edifice, certainly appears to be of less commanding proportions than it really is; but we have only to concentrate our attention upon it, and pace its length, to arrive at a correct appreciation of its dimensions. The nave and chancel, with the tower, measure 161 ft. long; the transepts 90 ft. wide. Still lingering in the churchyard, before entering the edifice to look at the white lighthouse on the rock in the glittering sea, now so well known, the eye presently falls upon a canopied monument rising high above the grass and nettles, on which reposes the figure of a female with an oar in her hand. This was erected to the memory of Grace Darling, by public subscription. Her real tomb is several paces from it, among the lowly gravestones of her kindred. The churchyard is not so far from the sea but that the sand from the shore is borne in eddies round it, and sometimes deposited on it in great quantities. There is a proof of this in the fact that the ancient crypt was completely buried in sand, and, until a few years ago, quite lost to sight and memory alike. This subterranean feature consists of two chapels, the one being about twice the width of the other; the length nearly the same, the smaller one having at its west end traces of steps that gave ascent to the chancel above. The large chapel measures 12 ft. 2½ in. by 21 ft. 5 in.: the smaller one is 5 ft. 6 in. in width, and the same length as the other, from which, however, the steps would make some reduction. The east ends of both are formed by the east wall of the chancel; and both chapels are lighted by narrow splayed slits looking into the paved trench made round the chancel, several feet deep, when the crypt was newly formed. The masonry is in excellent preservation, and proves, in various details,—such as a cusped trefoil-headed piscina, and shoulder-heads to the inside of the window-splays,—that crypt and church were built at the same time. There is an exterior entrance to the principal chapel on the same level as its base, likewise in good preservation, owing doubtless to its long concealment and conservation by the sand-drifts mentioned. Thus, as in the newly-found Saxon crypt at Hexham, there was a descent from the church and exit into the open air, or *vice versâ*. A curiously-low doorway, to pass through which it is necessary to stoop very considerably, affords communication between the two chapels. Seeing the importance of Bamborough in Saxon times, antiquaries would have rejoiced to find this long-buried crypt to be of Saxon workmanship; but it is not so. We must look elsewhere for the site of the edifice in which Aidan and his contemporaries and successors preached, with quickened pulse, the duties imposed upon us by the bright example and luminous exhortation of the Founder of our faith. As there is nothing left of the Saxon castle which the brave Ida defended till she saw her husband in the hands of the Norman Rufus, with the pincers ready to put out his eyes unless she surrendered, except the draw-well—still full of reverberations of these old times, as we may hear when the *cicerone* drops a stone into its depths,—it would be unlikely that the fabric of the church should have been handed down. At all events, there is no fragment of it here. The roof of the principal chapel is divided into two bays.

The principal entrance to the church is in the large double aisle on the south side. No sooner has the foot stepped through it than a pleasing effect is produced upon the eye by the spaciousness and antiquity of the interior, as revealed in the views between the massive arcades dividing the nave from the aisles. The columns supporting these are stout cylindrical pillars, with plain moulded caps, of transitional character; the arches are Pointed. Coming into view of the chancel, the effect becomes richer. This is lighted on the south side by lancets, most of which are filled with stained-glass of deep brilliant hues, grouped in couples, having an arcaded panel between each group. The east end is lighted by three lancets; the north side by two couples of lancets. It is seated with stalls, leaving for the sanctuary exactly that portion of the chancel which is occupied below by the crypt. The aisle and transept on the south side of the nave have three-light windows, except at the westernmost end of the former, where there is a lancet; that on the north side by double-lights, except at the north end of the transept, where a treble-light corresponds with that at the southern transept, and in the case of a curiously narrow splayed light at the east side of the same transept, which is of similar width to the slits mentioned as lighting the crypt. At the west end there are two double lights; and a single one lights the vestry built against the north side of the tower. We have said the stained-glass is of deep brilliant hue. Unfortunately, that is all that can be said of it. It was bought second-hand not long since, and bears no relationship to the general design of the fabric, nor to the intensely interesting history of the Early Church in this district, nor even to the loving bravery of the lighthouse-keeper's daughter. The chancel is nearly as long as the nave; the one measuring 60 ft. by 28 ft., the other, without the tower, 68 ft. by 30 ft.

Many will be glad to hear that Grace Darling's brother now fills the situation once occupied by her father. The lighthouse is a marvel of cleanliness and neatness. After climbing from the boat up an ascent of rocks covered with seaweed, through which Mr. Darling has cleared a precipitous path, the pebble-paved and enclosed yard of the lighthouse, where everything that is not painted red is painted white, appears strikingly different from terra-firma objects. The spiral staircase conducts the visitor past room after room, all scrupulously neat, and decorated with marine curiosities, till it terminates in the glass chamber containing the revolving lights. These are triplets of moderator lamps, each having a reflector of surpassing brilliancy behind it. The three lights appear as one from a distance, and as the revolution of the machinery takes these out of sight before the next three come into view, that intermittent effect is produced that makes it distinguishable from any other. Not a smut or a flyspot is perceptible on any part of the brilliant gear; nor indeed a mark of any kind, except one dent in a reflector that the keeper vainly endeavours to efface: a bird bewildered in a long-ago storm had dashed its breast through the glass walls and fell dead in its dearly-sought shelter. The rocks or islets that make this part of the sea so dangerous for navigation, are the breeding places of myriads of cormorants and other large sea-birds, which, as boats approach them, flap their wings, and with fierce noises object in a most unmistakeable manner to any one landing. The island nearest to the shore, with the lighthouse upon it, known as the near light, has a pele tower upon it of Edwardian architecture. The largest chamber on the principal floor has a small recess in it, which, from the opening in the masonry, appears to have been a confessional; it has lately been rendered habitable, and is now in use as a marine seat. St. Cuthbert's Chapel, upon the same island, has also been put into repair, and furnished with some old carved oak fittings brought from the mainland, and divine service is occasionally performed in it in the summer months. The memory of the two vigorous ascetic ecclesiastics, St. Aidan and St. Cuthbert, with that of their first regal convert, the good St. Oswald, is still green on this part of the coast.

Bamborough appears to have been as much knocked about by the Danes and Normans as Sebastopol was by the English and French. And the poetic faculty of Mediæval times seems to have idealised some such tragedy as that of the "thin red line" at Balaclava in the ancient Northumbrian poem, "The Laidley Worm of Spindleston Heughs," the long loathsome horror doubtless representing an armed and hostile force.

OPENING OF A PUBLIC PARK AT BINGLEY.—A public park has been opened at Bingley, amidst great demonstrations of rejoicing. The site of the park is at Brown Hill, on the left side of the Aire, and it consists of eighteen acres of ground, ornamentally laid out. The park bears the name of the Prince of Wales.

CHRIST'S HOSPITAL.

A COMMOTION lately made on the proposed removal of the Charter House from its ancient site to the country induces a return to the question mooted several years back in the *Builder*, advising a similar change for the still more important and equally ancient foundation of the Blue-coat School. Both are richly endowed and magnificent institutions, established for the education of the children of distressed but reputable parents; the Charter House having forty resident free scholars, and some sixty decayed pensioners; while Christ's Hospital nurtures, clothes, and educates 1,300 boys, the complement maintained for many years on its foundation. These children are taken in between the ages of eight or ten years, and are wholly sustained within the establishment, first in childhood at the infant school in Hertfordshire, and afterwards until completely educated; when for good scholars and successful aspirants there are exhibitions at Oxford and Cambridge, and livings in the Church.

It may be that in the lapse of ages, as the value of the estates and possessions of either have become enormously enhanced, and as the sites which were at first suburban have both been circumvented by the great and still growing metropolis, that the benevolent intentions of the founders of, and contributors to, these God-like charities have not been fully carried out; and that, in fact, we find therein, not the children of decayed or distressed tradesmen, or of reduced gentlemen, but the sons of independent families; yet still these institutions are to some extent eleemosynary; and, if the sphere of their utility could be enlarged, as most undoubtedly it could be by a transfer from the centre of the busiest of cities to the country or the suburbs of London, surely there can be no reason for the retention of the original localities, which are now as inappropriate to the objects of education and health as they were formerly well chosen.

Between Giltspur-street on the west, and King Edward-street on the east, and from Newgate-street on the south, the busiest thoroughfares of the City, and Bartholomew's Hospital on the north, a large space divided into several squares, with a magnificent hall, a church, and numerous extensive buildings, affords an asylum and playgrounds for over 800 boys. This is the largest school in England, educating as many as any four of our most celebrated metropolitan seminaries. It occupies, in proportion to its numbers, a large site; and the position it stands on has now attained a value that could never have been contemplated by the royal founder, Edward VI. Surrounded by prisons, hospitals, railways, markets, and busy thoroughfares, the space is needed for civic and national buildings of importance; and, as it has been prejudicial to educational purposes, and to the health and morality of the scholars, its removal to one of the Hospital estates in Middlesex, or one of the home counties, would enable the governors to increase the numbers at least 100 more, and, at the same time, to erect more extensive and appropriate buildings, with a park, gardens, and premises tributary to the bodily health, mental culture, and gratification of the pupils.

Many of the governors (300 in number) and principals of the institution are favourable to a change to the country,—the question having been under discussion some six years back. Since then, the completion of two railways, and the foundation of the great meat-market in Smithfield, make such a change more requisite, and on all accounts more desirable. But the Corporation has a paramount influence, as the lord mayor, the aldermen, and twelve common councilmen are governors *ex officio*; and they also have each of them the privilege of one presentation to the school every year; while the other royal and noble governors are entitled to one in turn only. Besides that, there are other deferences paid to the Corporation by the school, which is received annually at the Mansion House, when every boy is treated to a bun and a shilling!

It would be vain to expect that so large a body of distinguished governors would interfere in the management of the school, although each one contributes 500*l.* on election; still in a question of such vital importance, wherein the education, health, and nurture of 1,300 youths are concerned, it is worth a little consideration, and one attendance at a Board meeting, to settle the point of transfer or otherwise.

Seeing that a glorious national college of

1,500 students might be the result of a well-managed change to one of the home-county estates of the school, a day devoted to the object would be well spent if at the same time some little alteration were made in the ancient costume which is still so absurdly retained. It is needless to point out the absurdity as well as the inconvenience of a long yellow cloth petticoat, under a long blue coat; of antiquated tight knee-breeches and yellow (clouted) woollen stockings in summer; and the bare head! Nothing could be more ungainly, awkward, or perhaps more unhealthy.

A uniform of a modern kind would be more grateful to the public than the old monastic costume,—"*nimium ne crede colori*,"—it matters not what colour they choose, but the rifle uniforms are more consistent with modern tastes, and most certainly more conservative of health and comfort, and favourable to free exercise.

As the estates of the institution now realize 70,000*l.* a year, the additional income sure to be derived from the sale of the City grounds, the buildings, and Mr. Shaw's noble hall, offers a fair incentive to re-open the question of transfer to the country;—these remarks being offered as *addenda* to former articles in the *Builder*.

IMPROVEMENTS IN THE MANUFACTURE OF GLASS.

ON the 15th ult., M. J. Pelouze presented a memoir to the Academy of Sciences of Paris, on the action of metalloids upon glass, and the presence of alcaline sulphates in all the glasses of commerce.

It has been known for a very long time that glass is coloured yellow by charcoal and by sulphur, but the effects of other metalloids had not been ascertained. The experiments conducted by M. Pelouze, in the Siemens' furnaces of the Saint Gobain works, were as follows:—

Charcoal Glass.—To colour glass yellow by charcoal, he took the following composition (called A):—White sand, 250 parts; calcareous spar, 50 parts; carbonate of soda (of 85 degrees), 100 parts; wood charcoal, 2 parts. After a lapse of a few hours, the glass being melted and refined, the crucible was taken from the fire and cooled. It contained a mass of homogeneous glass, of a deep yellow colour.

Sulphurized Glass.—This preparation is the same as the last, and the colour identical with that obtained by charcoal. Owing to the volatility and combustibility of sulphur, 6 grammes of sulphur are equal in effect to 2 grammes of charcoal.

Silicium Glass.—The following composition was taken:—White sand, 250 grammes; carbonate of soda (at 90 degrees), 100 grammes; calcareous spar, 50 grammes; silicium, 2·50 grammes. This gave a yellow glass impossible to be distinguished from the two former.

Boron Glass.—Same mixture as the last, the silicium being replaced by 2 grammes of boron. This gave a glass of a fine yellow colour similar to the others above mentioned.*

Phosphorus Glass.—Amorphous and pulverulent phosphorus, mixed in considerable proportion with the composition A, gave no colour whatever to the glass. All his efforts to obtain a positive result failed, in consequence, no doubt, of the entire vaporization or combustion of the phosphorus; but when the composition A was acted upon by phosphate of lime (prepared by the process of M. Paul Thénard), weighing from 5 to 6 grammes, the phosphorus ceased to be volatile, and furnished a yellow glass exactly similar to the rest mentioned.

Aluminium Glass.—The presence of even a very small portion of aluminium in the composition renders the glass most difficult to be fused or refined. When, after much time and pains, this is accomplished, the result is a yellow glass, as in the other cases. He thus sums up, as giving a yellow colour to the white glass of commerce, among the metalloids, carbon, sulphur, silicium, boron, and phosphorus; among the metals, aluminium. M. Pelouze was of opinion at first that this constantly identical colour was due to the presence of silicium, the only one of these substances which necessarily entered into the composition of glass; but experiments soon demonstrated that he should search elsewhere for an interpretation of these singular phenomena.

* The silicium and boron, obtained through the kindness of M. H. Deville, were beautifully crystallized, and of remarkable purity.

Hydrogen, thoroughly purified, colours glass yellow at a red heat. If this gas be passed through a porcelain tube containing a platinum dish filled with fragments of glass, the latter, raised to a temperature not very elevated and then cooled in the current of hydrogen, gives a yellow colour, less fine and less intense than that produced by carbon, boron, &c., yet well defined. It is surprising that this re-action is not generally known, for reductions by hydrogen gas in glass tubes are of frequent occurrence in laboratories. The reduction of the silex by hydrogen appearing impossible, especially at low temperatures, M. Pelouze attributed this colouration of the glass to the presence of alcaline sulphates, of which every glass of commerce contains notable quantities, and therefore turned his experiments in this direction. In melting the composition A with some hundredth parts of its weight of sulphate of soda, and submitting it to a current of hydrogen, he obtained a glass of an exceedingly deep yellow colour, in which were easily recognisable the odour, taste, and all the properties of an alcaline sulphuret.

The most distinguished chemists who have analysed glass not having noticed the presence of sulphur, he proceeded very cautiously with his experiments in ascertaining the presence and proportions of sulphates in glass of commerce. For this purpose were examined mirror, window, table, Bohemian, and bottle glass, also a specimen of ancient glass brought by him from Pompeii in 1863. The mirror glass gave different quantities of sulphate of soda, varying from 1 to 3 per cent. The fusion, refining, and annealing of this sort of glass take in general from eighteen to twenty-four hours. After exposure to the same temperature for 120 hours, the glass contained still 7 per 1,000 of sulphate. The Pompeiian glass gave a quantity of sulphate of barytes corresponding to 2 per 100 of sulphate of soda. The Bohemian furnished 2·2 per cent. of sulphate of potash. The other glasses gave from 1 to 3½ per cent. of sulphate of soda. It is well known that glass-makers employ two fluxes, sulphate and carbonate of soda. As this last salt rarely exceeds 85 degrees, or at most attains 90 degrees, it contains constantly considerable proportions of the sulphate of soda. To obtain, therefore, glass totally free from the sulphate, a carbonate should be used which is free from it also, and operations should be carried on in the manufacture by aid of a carbonate of soda hitherto unknown, at least in glass-making, marking 92·5°. No such glass exists in commerce. It would be undoubtedly less alterable and more homogeneous than those hitherto known, and capable of rendering great services to the arts and sciences, especially to optics. With a view of proving that the colourization of glass, being due to the presence of sulphate of soda, when acted upon by charcoal, silicium, boron, &c., does not take place when the sulphate is absent, he took the following composition:—White sand, 250 grammes; carbonate of soda, *pure* and dry, 100 grms.; carbonate of lime, pure, 50 grms.; starch charcoal, 2 grms. The glass obtained was well melted, well refined, and *perfectly white*. The same result took place when the charcoal was replaced by boron, silicium, or hydrogen; but as soon as even half a hundredth part of sulphate was added, a light yellow colour was the consequence. Pure glass, then (made with carbonate of soda free from sulphate), is coloured yellow by sulphur, or an alcaline or earthy sulphuret.

Instead of preparing for commerce yellow glass by the aid of carbon, it can be obtained directly with sulphuret of calcium; but it must be recollected that the sulphate contained in the carbonate of soda acts as a combustible, and wastes a corresponding quantity of the sulphuret. It is, then, only when the sulphate has been destroyed that the excess of the sulphuret colours the glass.

The following combinations were fused:—

A. White sand, 250 grammes; carbonate of soda at 90 degrees, 100 grammes; carbonate of lime, 50; sulphuret of lime, 20 to 10 per cent.* This gave a very deep yellow-coloured glass, hardly translucent.

B. Same combination, with 10 grammes of sulphuret of calcium, or 2·5 per cent. He obtained a glass of a lighter yellow than one would have expected.

C. Same mixture, with 1·25 per cent. of sulphuret of calcium. This glass was completely colourless.

D. Same combination, with 5·5 grammes of sulphuret.

E. Same, with 6 grammes of sulphuret of calcium. Glass of not a very deep yellow, similar to crystals of native sulphur.

The extreme point of decoloration corresponds to 5·500 grammes of sulphuret of calcium, or about 1⅛ per 10 of the vitrifiable compound, and the yellow colour does not commence to appear until the quantity of sulphuret exceeds this last proportion. Also, in the compound B, where 20 grammes of sulphuret were employed, 14·5 grammes only entered into the colouring of the glass, 5·5 having disappeared by oxydation. With these data one can readily prepare a combination to produce the required shade of yellow. The proportions given by M. Pelouze, on a practical scale, are 270 kilogrammes of sand, 100 kilogrammes of carbonate of soda at 90 degrees, 50 kilogrammes of marble, 12 kilogrammes of sulphuret of calcium.

* Prepared by calcining at a red heat, a mixture of 250 grammes of wood charcoal, and 2 kilogrammes of gypsum. The sulphuret still contained a certain quantity of sulphate.

THE NATIONAL AND PORTRAIT GALLERIES.

ON the vote for 13,336*l.*, to complete the sum of 23,336*l.*, for the expenses of the National Gallery, including the purchase of pictures, being moved in committee of supply in the House of Commons, Mr. Cowper said an estimate of the cost which would be incurred by the enlargement of the National Gallery was in preparation. This estimate would be for the purchase of the ground in the rear of the National Gallery. Nothing could be done at present beyond the purchase of the land. The vestry were willing to dispose of their property, provided they received such a sum as would enable them to erect another workhouse in the suburbs, and a casual ward and parochial office within the parish. The trustees of Archbishop Denison's school were also willing to part with their property, provided means were given them of obtaining another school within the parish, and a similar arrangement could be made with the parochial school. It would, therefore, be his duty to bring in a Bill for the purchase of these properties; and the land thus purchased could be used from time to time as the enlargement of the gallery was required. A proposition had been made to the Royal Academy, informing them that if they pleased to apply for a site at Burlington House, the Government would be prepared to grant it to them; but there was not yet time to ascertain the intentions of the Academy, and a considerable time must elapse before they could obtain another building. Many of the persons for whom the national collections were kept could not, from their daily vocations, see them during the day. Therefore he agreed that, as far as it was feasible and safe, the public exhibitions should be opened in the evening. If a building were erected from the commencement with a view to using it at night, it would be made fireproof, and gas could be introduced in such a way as to cause the smallest amount of danger. He did not think, however, that it could be so arranged in the present building, and he could not but think that the pictures would run great risk if gas were introduced into it.

Sir W. Fraser urged the importance of increasing the Gallery, as an incentive to individuals to bequeath their pictures to the public..

A supplementary estimate has been presented to Parliament, asking for 20,000*l.* for the purchase of a site for the enlargement of the National Gallery. The total estimate of the sum that may be required to acquire possession of the land and premises between the National Gallery and Hemming's-row is 100,000*l.*

On the proposal that 1,650*l.* should be voted for the British Historical Portrait Gallery, Mr. Cowper said the portraits are at present only in a temporary place of accommodation: they can only be very imperfectly seen, and it is a source of anxiety that they cannot be better exhibited. It is intended to find a proper place for these portraits in the new gallery that is to be erected in connexion with the National Gallery. He would call the attention of those who manage the exhibition to the expediency of rendering the hours of viewing the exhibition more convenient to the public.

SOUTH KENSINGTON MUSEUM.—During Whitsun week 30,471 persons visited the Museum.

ON METROPOLITAN IMPROVEMENTS.*

IT has of late years been the fashion to sneer at the attempts made in this country to carry out such improvements as have become necessary from time to time in our metropolis, and to draw unfavourable comparisons between what is done here and what is done on the Continent under similar circumstances, and especially with regard to the magnificent works which have been carried out in the capital and provincial towns of France, under the auspices of the present Emperor.

Now, although we do not enjoy the advantages of a paternal government, to guide and preserve us in the right path, like our neighbours across the Channel, and our civil improvements, taken one by one, will perhaps hardly bear a comparison with theirs, either in grandeur of conception or in the rapidity and spirit with which they are carried out; still a glance at the extent and conditions of our metropolis some sixty years ago, will soon convince us that a very large aggregate amount of work has been done (some of it, no doubt, wretchedly conceived and badly executed), but which on the whole will bear a very favourable comparison with what has been accomplished in the same time in any part of the Continent.

Let us take a map of London at the time we are speaking of. This is one entitled "The Stranger's Guide to London and Westminster, exhibiting all the latest Improvements up to the present time," published in 1806. We shall find that, practically, the City was bounded on the north by the New-road,—Gower-street ended in a market garden,—and it was a pleasant walk by Bagnigge Wells, the Merlin's Cave, and the New River reservoirs, to the Angel at Islington. Parties to Primrose Hill could stroll through Marylebone-Park Farm (belonging to the Crown), and stop to refresh themselves at the Jew's Harp, if they desired anything more potent than the curds-and-whey they would obtain at the adjacent farm-house. The inhabitants of Westminster might walk across Tothill Fields to the river, and be ferried over to Vauxhall Gardens; or if they wished a quieter walk, might turn to the right, through the Five Fields belonging to Earl Grosvenor, and passing the large reservoirs of the Chelsea Water-Works, go by the Royal Hospital on to Chelsea Common. Westminster, Blackfriars, and London were the only bridges below Battersea. The access from London Bridge to the Royal Exchange was by way of the narrow Fish Street-hill and Lombard-street; while we can only hope that very few people were obliged to attempt the difficult passage from the Bank to Finsbury-square, up Coleman-street and Little Moorfields. Regent-street did not exist; and the Royal Mews, at Charing Cross, however convenient it may have been for the Prince Regent at Carlton House (close by), must have seriously impeded the traffic at the junction of the leading thoroughfares of the Strand, Whitehall, and Charing Cross. The *possibility* rather than the *probability* of being whirled through the air at the pace of ten or twelve miles an hour by steam on a railway was only then beginning to haunt the dreams of a few enthusiasts; and Londoners journeyed seven or eight miles out of town to be astonished at the marvel of a long string of coal trucks drawn by two or three horses along the Surrey Iron Railway, just then completed, to connect the river Thames at Wandsworth with the inland towns of Mitcham and Croydon.

Until within the last ten or twelve years, however, it has been tolerably easy for any one whose attention was directed to these matters, by business or inclination, to keep pretty well informed on the subject; but since then, such rapid and important changes have taken place, and others of still more consequence are in contemplation, that the difficulty of obtaining, or rather of retaining, the information has much increased, while the necessity for its acquisition, in a professional point of view, is daily becoming more obvious and pressing. It is now a matter of every day occurrence for an architect to be called on to advise on the eligibility of a building estate, or as to the site of a new building and the effect which the opening up of some new street or railway, or the contemplated diversion of a line of traffic, may have on the business or the objects for which it is proposed to be erected; besides the many other incidents of an architect's ordinary practice, in which the knowledge of the present or prospective value of property plays so important a part. Looking on the subject from this professional point of view, I have thought it might be of some advantage if I were to lay before the members of the Association a brief outline of some of the most important works which have been executed during the present century, and include in my survey some others which are already in progress or on the eve of being commenced. With the object I have just indicated in view, I propose to confine myself chiefly to a consideration of those undertakings which have been set on foot for the purpose of affording new or increased facility of intercommunication between different parts of the metropolis; the principal points we shall have to notice, therefore, will be bridges, streets, and railways.

Now, any one who has not thought much on the subject, as he walks down Regent-street, or along Cannon-street, and sees the line of splendid shops or ranges of lofty warehouses, knows very well that if he wishes to buy or rent premises, either in one street or the other, a price will be asked amounting almost to a fortune, or to a handsome yearly income for a man of moderate expectations; and the idea may occur to him, what a fine speculation it must be to get an Act of Parliament, and open up a new street like this! But he would think it strange, when he came to inquire more closely, and was told that the actual net loss on carrying out a new street is equal to one-half or two-thirds of the money expended, and that that proportion of his capital would be utterly sunk and lost. Cannon-street, which was only half a street, has, I believe, turned out the least loss of any recently executed, and it entailed a loss of 40 per cent. The leases of houses in Regent-street might have been bought, after they were built, at prices equal now only to the rents which they realize per annum. This arises from several causes, the principal being the fact that a new street is generally made through a densely-populated locality; and the area occupied by so many small houses, all of which have to be paid for by heavy compensation, is thrown into the improved width of roadway, which does not return a direct equivalent profit in the increased value of the frontages thereto. Again, it is a long time before a new street takes with the public or the shopkeepers. The slow progress of New Oxford-street towards respectability is a case in point; and, at the present time, it has hardly got into the position it ought to occupy as a leading thoroughfare. It is obvious, therefore, that the ways and means for accomplishing any of these undertakings are of the utmost importance; and to this subject we will devote a few preliminary observations, as the sources from whence such funds are derived must of necessity exercise an important influence, both on the character of the projects themselves, and on the rapidity and manner in which they are carried out.

First, then, it is well known, I have no doubt, to all, that the revenue of the estates belonging to the Crown is made over to the executive Government in return for what is called the civil list, or Parliamentary allowance to the Sovereign. These estates are vested in commissioners during the life of the reigning Sovereign, the reversionary interest of the estates being reserved for his successor. These estates themselves are therefore kept intact, the commissioners dealing with the revenue as may be deemed advisable in the interest of the State. It is with a portion of this revenue, aided by grants and loans from the Consolidated Fund, that many of the improvements at the West-end, where the Crown has valuable estates, has been effected; the two-fold object of accommodation to the public and increase of value to the reversion of the estates being for the most part kept in view.

Next, perhaps, we should mention the corporation of the city of London, who have a large revenue derivable from property in their possession, and a great proportion of this is annually devoted to improvements from which no direct profit accrues to them. They have also been intrusted, from time to time, with the administration of large funds which have been raised with the sanction of the legislature for making new streets and other works, such as London Bridge and approaches, the Royal Exchange approaches, and others of equal importance. The chief source of the revenue which they have thus administered is the well-known coal-tax. This duty consists of 1s. 3d. per ton on all coals brought within a radius of about 20 miles of the City, and was originally granted in the time of William and Mary, for the relief of the orphans and other creditors of the city of London, and has been continued from time to time by various Acts of Parliament, which point out the specific purposes to which it is to be applied. Now the coal-tax produces 240,000*l.*, and in 1836 it was about half that amount. The commissioners of sewers, also, of the city of London have a separate fund raised by taxation, out of which they are constantly, bit by bit, improving existing streets and setting back projecting houses whenever an eligible opportunity presents itself for so doing. There are also the local Boards, and the Metropolitan Board, who have certain powers of taxation, and now generally administer the funds derived from public sources for most of the important civic undertakings. A further source of revenue in years now gone by, was the profit derived from the State lotteries; and with it Westminster Bridge and the improvements at Snow-hill were partly executed. The profits were between 300,000*l.* and 400,000*l.* per annum. This was rather too good a sum to lose on the score of morality; and the committee, if they did not actually *recommend*, very strongly *suggested* that there would be no harm in raising by way of lottery (or, as some of the witnesses put it, availing themselves of voluntary taxation), a sum of about 120,000*l.* per annum, to be appropriated to improvements from which the public themselves would derive the benefit.

Bridges.—Facilities for crossing the river are perhaps the most important to a city like London. Bridges, therefore, seem to claim our first attention; and first among these comes London Bridge. We are all familiar with the aspect of old London Bridge, as it appears in old prints and engravings. There is a very good view of it in the Vernon Gallery, with its houses, gateway, mills, chapels, and narrow arches. The Great Fire of London, in 1666, destroyed most of the buildings, and damaged the bridge; they were, however, restored in a great measure, and so remained till about 1754; when an Act was obtained for clearing off the houses, throwing two of the arches into one, and otherwise improving the bridge. This was done from designs by Sir Robert Taylor and Mr. Dance; and as it stood after this, the bridge consisted of nineteen arches of various spans, the water-way at low water being only about 231 ft., while the space occupied by the piers and starlings was 700 ft. This of course was a serious obstruction to the traffic; and at length, after having been duly sat upon and reported upon by various committees, an Act of Parliament was obtained in the year 1823 for the erection of a new bridge. This was commenced in 1824, from the designs of Mr. Rennie, and opened on the 1st of August, 1831. The bridge is built of stone, and now consists of five arches, with a water-way of 690 ft., and a space occupied by piers of 92 ft. only. The cost of the bridge was about 426,000*l.*, which was raised principally from the Bridge House Estates, belonging to the Corporation.

The Act of Parliament for the construction of Blackfriars Bridge, which was originally called the Pitt Bridge, was obtained in 1756, under powers given to the corporation of the city of London, who were empowered to raise a sum of 30,000*l.* per annum by tolls, to pay off part of the expense. Out of a large number of designs, among which were some by Smeaton, Chambers, Dance, and others, that by Mr. R. Mylne was eventually selected. It was commenced in 1760, and completely opened in 1770. It was built of stone, and consisted of nine arches, leaving a water-way of 788 ft. The cost of the bridge and approaches was about 265,000*l.*; of this amount about 166,000*l.* may be put to the expense of the bridge itself. However, from some inherent defect in the foundations, the arches sank; and between the years 1832 and 1843, 105,000*l.* were spent in repairs; and since that time it has been a source of constant expense to the corporation. The parapets were taken off and replaced by wood; and within the last year or two the Corporation obtained a number of designs, and the new bridge, which is to be somewhat similar to that of Westminster, is now being erected, under the superintendence of Mr. Joseph Cubitt.

Westminster Bridge was commenced in 1739, from the designs by Labelye, and finished in 1750: about 300,000*l.* were expended. It consisted of fifteen arches, leaving a water-way of 820 ft. This bridge also, like Blackfriars, seems to have been a constant source of annoyance and expense. Even during its building, in 1747, one of the arches failed, and had to be made good at a large expense. The whole structure became so bad that, as we all know, it was

a

* From a paper by Mr. Penfold read as elsewhere mentioned.

taken down and replaced by the present structure from the designs of Mr. Page, which was commenced about 1855. There are seven main arches and two or three smaller ones. The bridge is nearly twice as wide as the old bridge, being 85 ft. against 44 ft. of the old. The bridge was erected in halves, the old remaining while half of the new was building: this delayed the completion. The cost was about 316,000*l.*, besides the approaches.

In 1809 the Strand Bridge Company was incorporated, and they were empowered to raise 500,000*l.* in shares, and a further sum of 300,000*l.* on mortgage. Further powers were obtained in 1816, and the name was changed to Waterloo. The bridge was commenced in 1811, from the designs of Mr. John Rennie, and opened in 1817. It consists of nine arches, with a water-way of 1,080 ft. The original estimate for the bridge alone was 680,000*l.*; and it deserves to be recorded, to the credit of Mr. Rennie, in a work of such magnitude and so much uncertainty, that the estimate was not exceeded by more than 5,000*l.* The total cost of bridge and approaches, with expenses, was 1,030,852*l.*, which was raised by shares, annuities, and bonds. The company met with great opposition from the City; and Mr. Mylne, their engineer, stated before the committee of the House of Commons that it would be impossible to build a bridge on the site; and, if built, it could not stand. It, however, has survived to the present time, and seems likely to last still longer; while Mr. Mylne's bridge is fast disappearing from the face of the earth. Whatever advantage this bridge may have been to the public, the shareholders have not derived much profit; and although, since the opening of the Waterloo Station, the traffic has increased, some years ago the 100*l.* shares might have been obtained for about 3*l.*; and the clerk to the company, in evidence before a committee in 1836, on a question of opening the bridge free of toll, said that the then market value of the whole property—shares, annuities, and bonds—was 303,841*l.*, or about 700,000*l.* less than the cost.

Southwark Bridge, an iron bridge, was also designed by Mr. Rennie. It has three arches, with a water-way of 660 ft.; it was commenced in 1814, and opened in 1819. The expenditure of capital for the bridge and approaches, and other expenses, was 666,486*l.*; of this, 186,000*l.* were paid for purchase of property, 278,000*l.* for masonry to bridge, 143,000*l.* for iron work to bridge and approaches, and 60,000*l.* for miscelloneous charges. About 150,000*l.* were raised by preference shares, at 5 per cent., and the holders of these are the only proprietors who have received any dividend, and these only at the rate of 2 or 3 per cent. The 100*l.* shares might have been bought at 2*l.* or 3*l.*

Vauxhall Bridge is also a cast-iron bridge: it was designed by Mr. James Walker, and carried out by him, though Mr. Rennie and Sir James Bentham seem to have had some hand in it. It was commenced in 1811, and opened in 1816. It has nine arches; and the cost was about 300,000*l.*

Lambeth Bridge was erected by a private company. It is on the suspension principle, being of wire cable. The bridge has three spans, each of 280 ft.: the piers are cast-iron cylinders, the same as Hungerford. There is a carriage-way and footpaths, the total width being 32 ft. The works cost about 28,000*l.*, the whole cost for land, &c., being 40,000*l.*

Chelsea Bridge, which connects Battersea Park with Pimlico and Chelsea, is a suspension-bridge. The width of the river at this point is 737 ft., which is crossed by three spans, the central one being 352 ft. between the piers. The roadway is 32 ft. in width; the footways overhang, and are each 7 ft. 6 in. wide. The four towers which support the chains are of iron, except about 18 ft. at the top, which are of copper partly gilt. The bridge and the embankment in connexion, are from the designs of Mr. Thomas Page.

Streets.—The first, perhaps, that claims our attention is that of Regent-street, and the works connected with it. The immediate cause of its being undertaken was the desire of the Commissioners of Woods and Forests to improve the Marylebone Park Farm, belonging to the Crown, and the lease of which had just expired; and also (through the influence of the Prince Regent) to form a good means of communication from Carlton House to this estate, where it was proposed that a residence for him should be erected. There was a competition, with a premium of 1,000*l.*, for laying out the proposed park and forming the necessary communications; but the result does not seem to have been satisfactory; and in the event a plan, which was a combination of the designs of Messrs. Leverton & Chawner and Mr. Nash, was adopted. This was about 1813; and, in a few years, the Regent's Park, as we now see it, was fenced in and planted, and the terraces built. The net cost of laying out the Regent's Park was about 20,000*l.* This was paid out of the revenue of the Crown estates. Regent-street was opened some time in the year 1819. The total cost of forming the street, for compensations, and other expenses, seems to have been about 1,406,000*l.*, and the expense of the sewer 60,800*l.* besides. Of this amount, 515,000*l.* were paid out of Crown revenues, and 800,000*l.* out of the Consolidated Fund.

As the improvements in Regent-street drew near their completion, those in the neighbourhood of Charing-cross were commenced, and comprised the extension of Pall-mall into the Strand, by cutting off a part of the churchyard of St. Martin's, clearing away the King's-mews, and the formation of Trafalgar-square, and widening the Strand and St. Martin's-lane at their junction with the extension of Pall-mall. Up to the year 1835 these improvements had cost about 1,500,000*l.*, principally defrayed out of the revenues of the Crown lands, and carried out under the superintendence of Mr. Nash.

In the meantime considerable improvements had been going on in the City. London Bridge I have already alluded to; and, in connexion therewith, the street from the Mansion House to the bridge, now called King William-street, was carried out, as also the continuation of that thoroughfare to Finsbury and the New-road by way of the present Princes-street and Moorgate-street. These works were carried out under the superintendence of Sir Robert Smirke and Mr. Montague, the City surveyor. King William-street cost about 212,000*l.*; Moorgate-street about 156,000*l.*; the approaches on the Surrey side about 300,000*l.*; and other matters in connexion made the total cost about one million, and this burden was laid on the coal-tax. St. Thomas's Hospital, the burning of the Royal Exchange also, and its re-erection, necessitated great improvements in the neighbourhood of the Bank and Mansion House; and these were also paid for out of the coal-tax fund. Some new openings in connexion with Waterloo Bridge were also carried out at this time.

In 1836, a committee of the House of Commons was appointed, of which Alderman Wood was chairman, to inquire into a variety of schemes connected with London and Westminster, among which were the improvement of Skinner-street and Snow-hill by a viaduct; a new street from St. Paul's to Brackfriar's Bridge; from Farringdon-street to Clerkenwell; from the Post Office to the Bank; Westminster Abbey to Pimlico; Finsbury-square to Whitechapel Church; St. George's Church to Blackfriars Bridge and Waterloo Bridge; and opening Waterloo Bridge and Southwark Bridge free. Mr. Donaldson, Mr. Montague, Mr. Cottingham, and others, gave evidence, and submitted plans. In 1838, the committee were again engaged on the same subject, and they recommended Cranbourne-street, Endell-street, New Oxford-street, and Spitalfields, for some of which plans had been prepared by Mr. Nash.

In 1844 and 1845, Cranbourne-street, New Oxford-street, and Spitalfields-street were opened, at an expense of about 841,000*l.* These were carried out under the superintendence of Mr. Pennethorne.

The improvements in Westminster, and notably Victoria-street, were entrusted to commissioners, who were incorporated by the Westminster Improvement Act, 1845. This, however, did not work very satisfactorily, and an Act was required nearly every following year up to 1852 and 1853, giving powers to raise various sums of money amounting to something like 250,000*l.* The commissioners also obtained powers to lend money to builders, which they did to the amount of about 400,000*l.* They also issued a large number of bonds without sufficient security; these got in the market, and became depreciated in value; the creditors interfered, and there was the usual crop of Chancery suits. And in the years 1859 and 1860, Acts were obtained for reconstructing the commission on a new basis, and making arrangements for paying off the creditors, Mr. Tite having been persuaded to take a leading part in the new constitution.

Cannon-street had also been opened in the mean time, at an expense of about 500,000*l.* paid chiefly by the Corporation of the City.

The Act for the new street in Southwark was obtained in 1857. The works were commenced in 1861, and the whole of the street was thrown open to the public on the 1st of January, 1864. The street is about two-thirds of a mile long, and the estimated cost was 519,424*l.*, including about 9,000*l.* for sewer. Instead of the sewer, a subway was carried out at an expense of about 25,000*l.*, including which the total cost of the street has been 557,051*l.*, a result creditable to Mr. Marrable, who carried it out; and, it is anticipated, that of this amount about 267,000*l.* will be recovered by sale of land, &c.

Almost every engineer and architect who has taken any leading part in such matters, from the days of Sir C. Wren downwards, has been pressing on the notice of the authorities the necessity of embanking the Thames. Almost every committee has reported on the subject and earnestly recommended its adoption. John Martin, the painter, made great efforts, extending over twenty-five years, to get a design he had made carried into effect. In 1842 a commission, with the late Duke of Newcastle for chairman, was appointed, and many designs were laid before them; but nothing was done except here and there in connexion with other works, and by private individuals, according to a line laid down by Messrs. Walker & Burgess; and it was not till 1861, after the Metropolitan Board of Works had been empowered to carry out the main drainage, and the inhabitants of the Strand, along which the low-level sewer was to be carried, became alarmed at the prospect of being enclosed in a hoarding for a year or two, that any serious steps were taken to carry out this long-contemplated scheme. In this year, another commission was appointed, who took evidence and received a large number of designs, one by Mr. Sheilds, being the basis of that now proposed to be carried out. The commission recommended the Embankment, and a new street from Blackfriars to the Mansion House. An Act was then passed, providing funds for the Embankment, by continuing the Coal and Wine Duties till 1872. The necessary plans were then prepared, and, after much opposition from the Duke of Buccleuch and others on the question of carriage traffic, the Thames Embankment Act was passed in 1862.

This Act authorises the construction of an embankment, with a roadway of 100 ft. wide, and the necessary junctions of existing streets therewith. The width of the Embankment varies from 450 ft., near Buckingham-street, to 130 ft. by Somerset House. The works were commenced at the end of 1863, and two contracts are let; one from Westminster to Waterloo, by Mr. Furness, at 520,000*l.*; and the other, from Waterloo to near the Temple, by Messrs. Ritson, at 229,000*l.*: this includes the Embankment sewer and subway.

The Act for the Thames Embankment did not include the powers for the new street to the Mansion House, the Act for which was obtained in 1863 by the Metropolitan Board, after some sparring with the City authorities, who wished to have the administration of the funds and the honour of carrying out the work.

The railway will pass up the middle of this street, which is not yet commenced. The street will have a subway.

In revenge for slight put upon them in giving to the Metropolitan Board the works of the new street within their boundary, the Corporation applied for, and obtained, last session, the Act for the Holborn Valley Improvement.

SANITARY WARNINGS DISREGARDED.

THE occurrence, in Nichol-street, Bethnal-green, of yet another of those dreadful plague-warnings which are following each other up, in rapid and still more rapid succession, like a ghastly procession of evil-foreboding skeletons, suggests to us that this same Nichol-street was distinguished in "Another Blow for Life," as a fitting example of all that is vile and death-dealing in the horrid metropolitan district which is now making itself so notorious before the public. In alluding, at page 12, to the operation of the Local Management Act, and the mistaken idea that the district surveyors under the Building Act, whose duties are entirely structural, were responsible for neglects occurring under the Local Government Act, the author says:—

"For the most part, therefore, the Act is nugatory,—we had nearly written, with Hood, Newgatory,—excepting where, as in Islington, and some other parishes, the inspector of nuisances, or other qualified person, obtains

the proof of occupancy, calls on the district surveyor for a report as to the structural deficiency only, and carries the case before a magistrate, in accordance with the Act. *This should at once be done in Bethnal-green, and scores of murderous dens would be shut up.* It is no answer to say the inhabitants prefer to live, or (more truly) to die, in such rooms rather than meet the difficulty of finding a better room elsewhere. They must not be allowed to do so. Suicide is not permitted; still less suicide that leads to the death of others not desiring to die, and to the pauperising of a still larger number, who must be maintained by the more sensible and provident."

One of the worst examples, that of a room (underground) in Nichol-street, No. 59, is then described and illustrated by engravings. The author then proceeds to remark on the "frightful picture of what met the sight in an upper room of a neighbouring house," and reiterates the immediate object which he had in view in drawing such special attention to Nichol-street, Bethnal-green,—an object

"which is special and precise,—to call for a sufficient water supply; the periodical removal, at short intervals, of all refuse; and the enforcement of the law in respect of the occupancy of underground dwellings."

It is now much more than twelve months since these desiderata were so earnestly called for; but we regret to observe, from the report now to be given from the daily newspapers, that Nichol-street, Bethnal-green, is no better, in respect to filth and want of water, at least, than it then was.

An investigation respecting the cause of the death of Frances Hogg, aged 48 years, has been held at Bethnal-green.

It appeared from the evidence that the deceased lived with her married daughter in a room at No. 12, Old Nichol-street. There were five rooms in the house, each of which was let, "furnished," at 3s. 6d. a week. Twenty-eight persons in all lived in it. The sanitary state of the place was described as being dreadfully bad: the stench was abominable and awful. The yard was wet. A month or two back there had been no water laid on for four or five weeks at a stretch. The wells had not been cleaned or repaired for an indefinite period, and the cesspool had not been cleaned out. The parish doctor, Mr. Heycock, was called in to the deceased. He pronounced her to be dying from fever, and she died in half an hour afterwards. Her son-in-law had the fever too, and his wife had to be removed to the hospital.

Sarah Ann Raysbeck, a lodger in the house, said that while they were without water they continually complained to the landlady, Mrs. Hurst, who lived next door, but she only said, "You must do as I do—do without it; get it where you can." Witness told the landlord that the deceased was dead, and in an hour he came down with a man, who put two bags of lime and gravel, &c., into the cesspool to fill it up. The man told her to tell any one that might come that the nightman had carted the soil away; but none of it had been removed: it was only covered up. He left in the evening before the job was finished. When he came back in the morning, witness's husband put his head out of window and said, "You are too late: the coroner appears to have been here and seen everything." The man said, "You don't say that!" and went away, leaving the place as the jury found it.

Dr. Letheby, professor of chemistry at the London Hospital, said that he inspected the premises in question. The house was dilapidated. The ground-floors and the flooring of the passages were decayed, and permitted the escape of the effluvium from the soil. The water seemed to come into the upper rooms from the roof. The ceilings were broken. The yard was unpaved, and in a filthy condition. The closets were undergoing repair. There had been no proper drainage of the place, but the soil was received into a sort of pit, whence it had soaked into the earth of the neighbourhood for a considerable distance. In close proximity to the closet was the water-butt, which was uncovered and open to the reception of filth, and to the offensive emanations from the closet. The neighbouring houses and Shepherd's-court, in the rear of them, were in the same condition, the privies overflowing with soil, the water-butts open, &c. He had rarely seen places in a worse condition.

The Coroner, in summing up, said that the state of the dwellings and neighbourhood in question was disgraceful. It was discreditable to the landlord, a man holding an exalted position in the kingdom, to have part of his income drawn from property in such a condition; and then there came the middleman, who made his money by grinding the poor. The next parties to blame were the sanitary officers of the parish, who permitted such most dangerous nuisances to exist.

A Juror asked who the freeholder was?

Mr. Bainbridge, surveyor to the vestry, said he believed the Marquis of Chandos.

The Jury, after a long deliberation, returned the following special verdict:—"That deceased died from typhoid fever, accelerated by the sanitary condition of the neighbourhood and premises in which she died; and they consider that such condition is dangerous to human life, and shows great neglect on the part of the freeholder, as well as leaseholder, of the premises, and also on the part of the sanitary and medical officers of the parish; and from the evidence it appears that there is not a sufficient number of sanitary officers for the inspection of so large a parish."

The accounts given in this report of the state of the street are as like as possible to much that was said of it and of the district which it was shown so fully to represent, in our pages long ago.

The serious increase in the mortality of Shrewsbury of late years is still engaging the attention of the local papers. One of these, called the *Journal*, appears to be an exponent of the dirt interest, which is very active, like the dirt itself, in Shrewsbury. The *Chronicle*, on the other hand, gives convincing proofs of "the connexion between dirt and death" as "one of those stern facts which few will be prepared to deny." A heavy responsibility rests with the local press of a town in respect to its line of conduct as to sanitary matters. We have always been grateful to the *Shrewsbury Chronicle* for the proper spirit in which it received our somewhat severe strictures on the state of the town in our leading articles of 10th and 17th August, 1861. In reprinting these the editor said:—

"While on this subject, we may allude to an article in our sixth page from the columns of the *Builder*, wherein the writer draws a frightful picture of the sanitary state of the town. It is evident he has sought out *some* of the worst places,—which are, however, quite as horrible as he has described them; and, taking them under their most repulsive aspect, has presented such a picture as ought to induce our Improvement Commissioners to inquire from their inspector if such things really exist."

That they "really exist," the inhabitants of Shrewsbury, we are glad to perceive, are now convinced; and, should Sir George Grey be also convinced, in spite of the "explanation" of the corporation, there is now a strong hope of speedy sanitary amendment and consequent diminished mortality. As we remarked in our leader of 17th August, 1861,—

"One man can do but little: Hotspur could not control the result of the battle of Shrewsbury. To accomplish a decrease of the death-rate there must be accord and determination; in other words, 'a long pull, and a strong pull, and a pull altogether.' It is to be hoped the men of Shrewsbury will go in and do it."

It has been urged by Dr. Lankester that mortuaries for the dead, to prevent the necessity for poor people living and even sleeping with their dead before burial, should be established; and a correspondent of the *Morning Post* draws attention to the fact that the Vicar of Heston suggested the same thing "some months since." The suggestion is a good one, and ought to be realized without loss of time; but, had the *Post* correspondent been a reader of the *Builder* some *years* since—nay, a good many years since—he would have known that the desirability of establishing mortuaries for the dead was then repeatedly urged in our pages.

NORTHUMBERLAND STREET SCHOOLS, IN THE PARISH OF ALL SAINTS, POPLAR.

THE establishment of these schools is mainly owing to the energy and exertions of the Rev. T. W. Nowell, the rector of Poplar. The first stone of the new buildings was laid on Monday, the 21st of November, by Mrs. Money Wigram, in the presence of the Lord Bishop of London, and an influential body both of clergy and laity.

The schools are being erected in the midst of the densely-populated parish of Poplar, and comprise accommodation for about 900 boys, girls, and infants, together with class-rooms and two complete teachers' residences.

The external construction is of stock bricks, with red bricks in window-arches, and in parallel bands on the wall face. The internal face of the schools and class-rooms is also worked fair, with red brick courses every 2 ft. The ground-floor is appropriated for the boys and infants, and their class-rooms; the upper floor for the girls and the two residences.

The contract for the buildings has been taken by Mr. W. Heward, of Chandos-street, Covent-garden, for 3,687*l.*, to whom, also, will probably be entrusted the erection of a church in the same parish, about to be built in the East-India Dock-road.

The architects, both for the schools and the church, are Messrs. Francis, of Upper Bedford-place, London.

CHORLTON UNION HOSPITAL, NEAR MANCHESTER.

THE hospital of which a plan is given on the adjoining page is now in course of erection at Withington, about five miles from Manchester, for the guardians of the Chorlton Union,—a union said to be one of the largest, if not the largest, in the kingdom. The population of the district has increased enormously during the last five or six years; and the great rapidity in the growth of pauperism has induced the guardians to undertake the important works which are now in progress.

Some years ago the guardians erected a large workhouse; but the hospital part of the building has long been found utterly inadequate to meet the requirements of the union, the inmates being frightfully overcrowded, and all kinds of infectious diseases being of necessity indiscriminately mingled in the wards. The absolute necessity of a change led a few of the guardians to study the subject very carefully, and the result of their inquiries was a determination to erect a new hospital, on the pavilion principle, on a plot of land at the back of the workhouse buildings, and to appropriate the present hospital as lunatic wards.

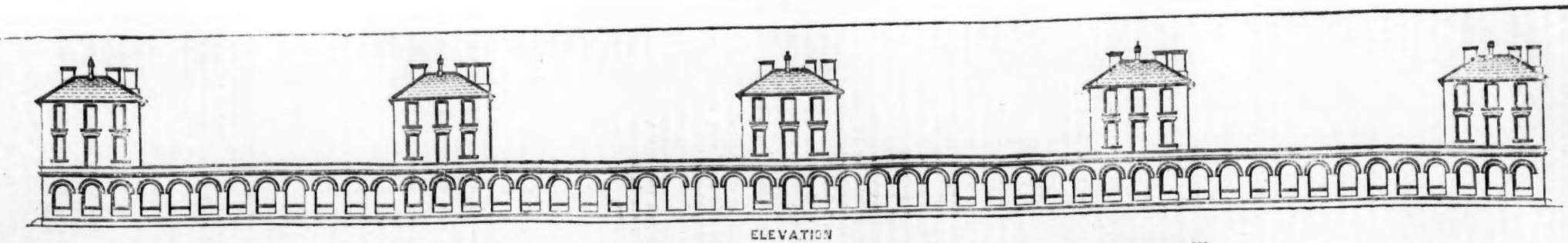
The plan we illustrate, which gives accommodation for 500 beds, is only a part of the ultimate scheme which will embrace eight pavilions, and it is probable that very shortly the three other blocks will be proceeded with. Mr. Thomas Worthington, of Manchester, is the architect to the guardians, and the contract for the execution of the works has been taken by Messrs. Warburton. The architect tells us that he has largely availed himself of the articles and suggestions made in the columns of the *Builder*, and of the valuable works of Miss Nightingale and Mr. Roberton, on hospital construction. He has also visited many of the most important hospitals in Brussels, Paris, Bordeaux, and other places, previously to preparing his plans.

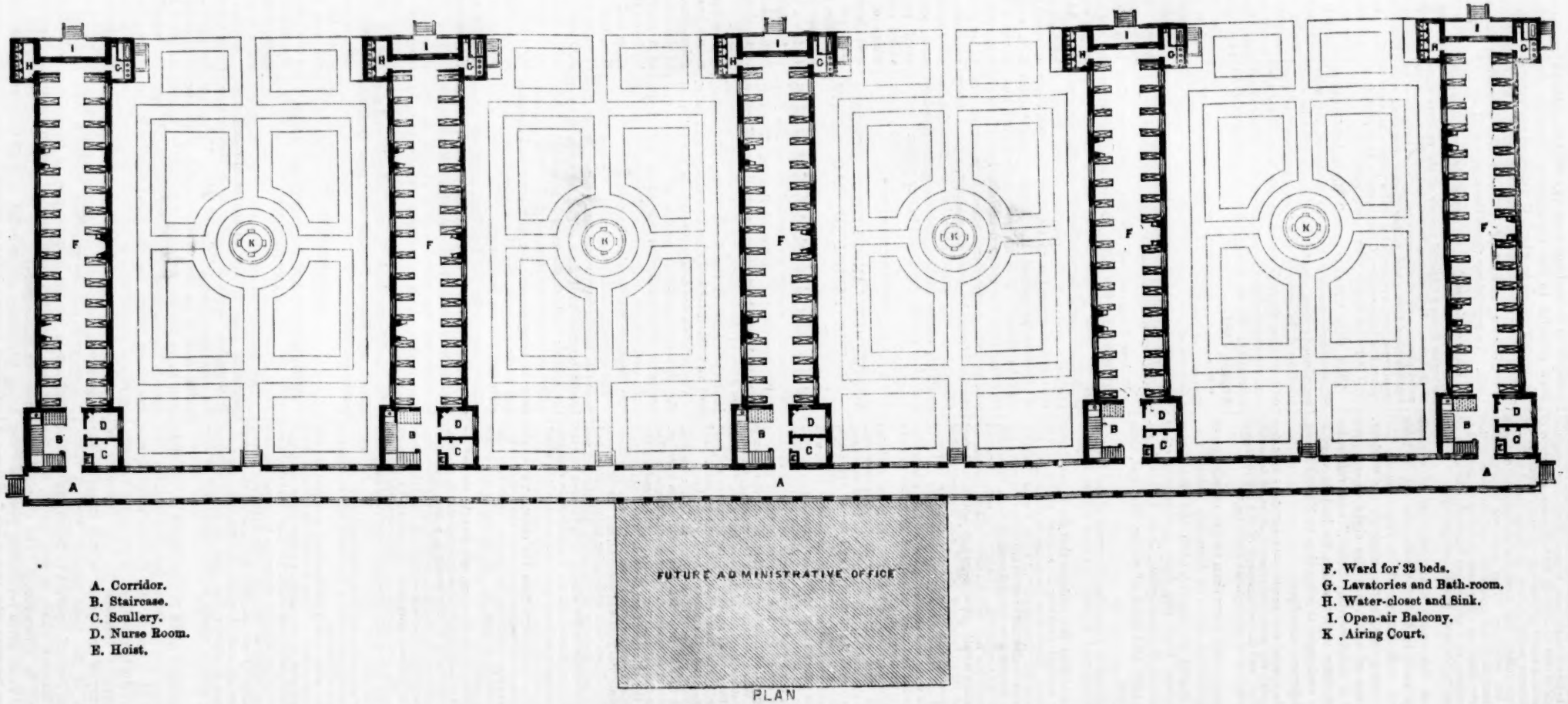
The buildings were commenced last spring, and it is expected will be completed in the course of the present summer. They consist of five pavilions connected by a long arcaded corridor. Each pavilion is 124 ft. long by 24 ft. wide, containing three floors, and ninety-six beds for patients, in addition to the small rooms for the nurses, adjoining the wards. The height of the wards is respectively as follows:—Ground floor, 14 ft. 6 in.; first floor, 14 ft.; top floor, average of about 15 ft. The wards are entirely warmed by open fires, three in each ward, each 5 ft. wide and 4 ft. 6 in. high. They project about 3 ft. into the wards, and it is intended to surround them entirely with firebrick, the coal being confined simply by light iron bars. The windows are 4 ft. 8 in. wide, in three divisions; the two lower portions opening like an ordinary sash, and the top part being pivoted; while a small portion of the top of each window is provided with a narrow passage for air the full width of the window, but guarded by a sloping iron frame covered with fine wire gauze, so arranged as to distribute the air, and give it a direction towards the centre of each ward. These windows reach from 2 ft. 9 in. above the floor to within a few inches of the ceiling. Each patient will have an air-space equal to about 1,350 cubic feet, which is very considerably greater than the regulation quantity defined by the Poor-law Board.

The arrangement of the latrines and bath-rooms has been the subject of very careful consideration. It will be observed that the position of the windows in the latrine department admits of a current of air being constantly kept up between the wards and the W.C.s. The bath-room and lavatories are in the opposite projection, and in the angle of this wing are the dust-shoot and foul linen shoots; the former being of iron with hoppers on each floor, and discharging into a small sunk pit outside the building; the latter having its outlet into a ventilated chamber in the basement. A large ventilating trunk is provided to carry off the foul air from these flues terminating in a revolving ventilator. Between the two wings containing the latrines and the bath-rooms, on each floor, is an open-air balcony with a large sash-window, opening so that a full-grown man may walk out without stooping. This window reaches, like the others, to the ceiling, and over the door at the opposite end of the ward is a louvred window, also reaching to the ceiling, worked by a lever and rod, so that a rapid change may be made in the air of the wards by opening these windows at the two extremities, when the air may from special causes have become foul or oppressive. The balcony looks over a wide extent of green fields, and it is hoped will prove a feature of value to convalescent patients.

A point of the greatest importance is the distance between the pavilions, and this, after much discussion, has been fixed at 100 ft., or more than twice the distance between the pavilions at the great hospital at Bordeaux. At the Hospital Lariboisière, Paris, the distance is 65 ft.; at the new Herbert Hospital, Woolwich, 64 ft.; at St. Jean, Brussels, barely half that distance. This interval, it is believed, will allow of a sufficient circulation of air round the several buildings, and as the country about is open and used chiefly for agricultural purposes, it is anticipated that the wards cannot fail to be well supplied with pure fresh air.

The administrative buildings will be placed in the centre of the corridor, and hoists will be provided in the staircase of each pavilion to raise the food to the several floors.



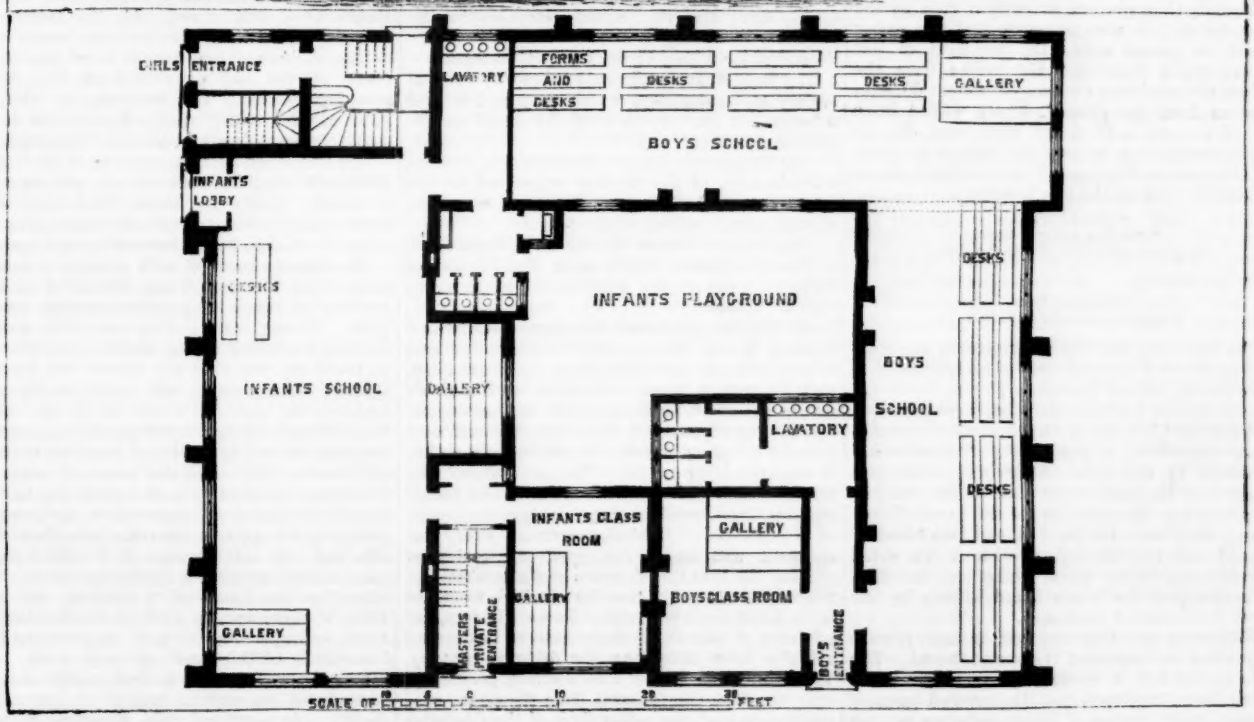


A. Corridor.
B. Staircase.
C. Scullery.
D. Nurse Room.
E. Hoist.

F. Ward for 32 beds.
G. Lavatories and Bath-room.
H. Water-closet and Sink.
I. Open-air Balcony.
K. Airing Court.

CHORLTON UNION HOSPITAL, NEAR MANCHESTER.—*General Plan and Elevation.*—MR. THOMAS WORTHINGTON, ARCHITECT.

NORTHUMBERLAND STREET SCHOOLS, POPLAR.—MESSRS. FRANCIS, ARCHITECTS.



Plan.

DISCOVERY OF THE BONES OF DANTE.

DANTE ALLIGHIERI, as is well known, ended his days at Ravenna, whither he had retired after his unjust banishment from Florence.

In Ravenna he was the guest of Guido da Polenta, the then Lord of that State; and there, though yearning to return to his native city, he gave himself up to his poetical studies. But Venice began to wage war with Guido, his host; and the latter besought Dante to undertake an embassy to that powerful belligerent State, to attempt to bring her to reasonable terms of peace. He failed to accomplish the end of his mission. The Venetians forbade his return to Ravenna by sea; and, after a fatiguing journey over the marshy pestiferous lands of the east coast of Italy, and sad at heart at the ill success of his negotiations, he fell ill of a fever, and died, September 14th, 1321.

"Guido da Polenta," says Boccaccio, "had the body of the poet laid on a bier, decked with poetical adornments, and this was borne on the shoulders of grave citizens to the Convent of the Frati Minori of Ravenna with due honours; and, in the stone urn or coffer (*area lapidea*), he caused it *pro tem.* to repose, intending to honour the remains of his friend with a sepulchre more beautiful than any before seen."

What the vicissitudes of fortune prevented Guido da Polenta from doing was effected by Bernardo Bembo, prætor of the republic of Venice, at Ravenna, in 1483. The insignificant tomb gave place to one of coloured marbles and ornamental sculpture. The original inscription, by Giovanni del Virgilio, a poet of Bologna and friend of Dante, was omitted, and instead, on the right of the chapel, where the ashes of the poet reposed, appeared the still traceable inscription recording the erection of the tomb by Bernardo Bembo. This tomb was surmounted by a half-figure of Dante, by Pietro Lombardi.

In 1692, Cardinal Corsi, legate of Ravenna, again undertook the required restorations and some additions; and in memory of this placed, on the left of the chapel, an inscription relating his deed.

Finally, in 1780, the tomb was again restored, by Cardinal Gonzaga, who took from the left wall of the chapel the inscription of Cardinal Corsi, caused one to be placed in its stead written by Morcelli, with an allusion to the restorer Gonzaga introduced in it, and as such the monument has remained to the present day.

In order not to interfere with the late centenary *fêtes* in Florence, Ravenna postponed hers until the end of the present month, as we mentioned last week.

There stand behind the monument four arches (bricked up) of an ancient chapel called Braccioforte. It was at first intended to remove them, to give greater space around the monument, but finding they were of as early a date as the ninth century, it was proposed that the arches should be opened only. On the 27th of last month, while removing the bricks from the arches, the workmen discovered, about 60 centimetres from the ground, firmly walled in, a box of pinewood, 80 c. by 30 c., and 31 c. in height, containing, as said the telegram bringing the news to Florence, "the veritable bones of Dante." Inside the box is written:—

"DANTIS Ossa,
A Me Fra Antonio Santi,
Hic posita anno 1677, die 18 Octobris."

On the outside,—

"DANTIS Ossa,
Denuper revisa, 3 Junii, 1677."

The discovery, as may be imagined, has occupied exclusively the attention of all interested in it, in the old city of Ravenna.

At a council held on the 31st, it was decided that the marble tomb of Dante should be opened, to ascertain what it contained. A commission appointed by the Government here, with Otto Vanucci at its head, proceeded to Ravenna, to be present at the opening of the tomb. This was publicly done on the 7th, and two bones of a hand and one of a foot, with a few dried laurel-leaves, alone were found in it. The authenticity of the bones found hidden by the monk is considered confirmed.

Numerous are the conjectures and reports respecting the reason of this concealment. The date agrees with a struggle made to put down everything anti-Papal, and the revered bones of Dante, whose verses of bitter acrimony against Papal abuses were passing from mouth to mouth, might have been feared as a rallying subject, have been threatened to be removed, and have been hidden by this monk in consequence. Others imagine they were intended to be taken to Florence. Their absence could not have been known in 1780, or Gonzaga would not have lavished any care on the preservation of the monument. The records of his family, as of those of Corsi, will be searched for any light to be thrown on the mystery. In the mean time, the wooden box is to be encased in a strong iron one; and after the *fêtes*, at which the bones, jealously guarded and covered with glass, are to be shown publicly, they are to be placed in the monument.

We regret to have to record an act of modern Vandalism that has occurred, since the discovery which has attracted persons from all parts of Italy. To the restorations of Gonzaga—done by Morigia, a native of Ravenna—the arms of the cardinal have been twice added. These, within the last ten days, have been destroyed, and a threat implied that a two-headed eagle, also found among the sculpture, shall be erased also. These hot-headed iconoclasts forget, or are ignorant of the fact, that the Venetian prætor and the cardinals Corsi and Gonzaga were alone willing and active in preserving the monument of the Florentine exiled poet, and also of the fiercest Ghibelline who ever lived and wrote.

Florence.

RESTORATION, CONSERVATIVE AND DESTRUCTIVE.

THE ECCLESIOLOGICAL SOCIETY.

THE twenty-sixth annual meeting of this Society was held on Thursday evening last, at the House in Conduit-street.

The chair was occupied by the Rev. William Scott (chairman of committees), who observed that he had been suddenly called upon to preside, in consequence of the absence of the president, Mr. A. J. B. Beresford Hope, who was prevented from attending in consequence of the sudden death of his brother-in-law, Lord Cranbourne, which took place most unexpectedly that afternoon. Referring to the operations of the Society generally, Mr. Scott observed that when they looked back to the state of church architecture six-and-twenty years since, and contrasted it with the improved tone of the present day, he thought they had great reason to congratulate themselves upon the progress that had been made. A badly designed church was nowadays very rare, and such was the rage for re-edification, that the Society had rather to curb excessive zeal than to stimulate the negligent or apathetic.

The Rev. B. Webb read the report of the Society for the last twelve months.

On the motion of Sir C. Anderson, it was received and adopted.

The Rev. Mr. Cox called attention to the propriety of having a choral festival in either Westminster Abbey or St. Paul's Cathedral.

The Rev. H. L. Jenner said there was a choral society at Canterbury, which proposed to hold a festival at one or other of the great metropolitan churches.

The Treasurer's report was received, and the office-bearers of the Society appointed for the next year. Archdeacon Freeman was also elected vice-president of the Society.

The formal business having been disposed of,

The Chairman called upon Mr. Parker, of Oxford, to report his experiences in a recent visit to Rome.

Mr. Parker expressed his regret that he had nothing favourable to report. The intentions of his Holiness the Pope were no doubt good, and he was a most estimable and amiable person; but unfortunately for ecclesiological art, he was surrounded by as ignorant and conceited a set of architects as could be got together in any part of the world. The restorations now going on in Rome reminded one of the buildings put up by churchwardens during the reign of George III. Christian art of every description was being destroyed wholesale, including the beautiful frescoes of the twelfth and thirteenth centuries, the like of which were not to be found anywhere out of Rome. In fact, the advisers of the Pope deprecated as modern all art of a later date than the fifteenth century. There were in Rome two distinct periods of art: the first, the removal from the pagan era; and the second, the millennium of the Christian era: but it was not until about the fourteenth century that the Romans had any style of their own. He regretted to observe that the wonderful works contributed through three generations by the Cosmeti family were either wholly neglected or wilfully destroyed. The modern architects of Rome prided themselves upon following in the steps of Vitruvius, forgetting altogether that Vitruvius built heathen temples and not Christian churches. He regretted to say that, among other demolitions which were threatened, was the destruction of the wonderful mosaic pictures of the fourteenth century in the church of St. John Lateran. These were about to be destroyed, in order that the choir might be enlarged. He feared that unless some earnest protest could be addressed to the Papal Government, every vestige of early Christian art would be lost to Rome.

A member inquired whether an archæological society had not been established in Rome.

Mr. Parker replied, that such a society had been formed, and that it had been supported by several learned persons, including many ecclesiastics of the Roman Church, and among them Monsignor Talbot (now Cardinal Talbot), who filled the office of vice-president. Unfortunately, however, he (Mr. Parker) was so unhappy as to fall foul of the Pope, although he had not the faintest intention of giving offence. It seemed that, wishing to visit the lower church of St. Pudentia, he applied to the abbess for leave to make certain excavations at his own expense in order to assist his studies, the body of the church being filled up with rubbish and earth which had been thrown through the windows. His application was favourably entertained by the department of the Government to which the subject belonged, and a resolution was passed by three to one giving him the necessary permission. However, when the matter was brought before the Pope, he declined to sign the order, having been prejudiced against him by reports that he had been seen "poking about" all the churches in Rome making discoveries. The Pope was angry when he was told that he (Mr. Parker) had made a discovery of the lower church of St. Pudentia, declaring that it was no discovery at all. In this respect, however, his Holiness was right, because the fact of the church being there was stated by Baronius, although when at Rome he (Mr. Parker) had not had an opportunity of consulting that authority. He regretted, however, for the sake of archæology, that the Pope had taken offence at his very harmless proceedings, for he stopped his lectures after two had been delivered.

Sir C. Anderson brought under notice certain restorations at the cathedral of Lincoln. He did not think that the present mode of conducting the works there was quite conservative. The stone of which the cathedral was built was a very good oolite, similar to that at Peterborough and Ely, and in his opinion there was no reason whatever for scraping it, simply because it had become necessary to replace decayed stones here and there. At the minster at Beverley, good Yorkshire common sense came to the rescue, and new stones were put in the place of the old ones without any of the scraping process. The scraping to which he referred gave a very spotty appearance to the south and west fronts of Lincoln Cathedral.

The Chairman said the remarks of Sir Charles Anderson reminded him of two effigies of the Courtenay family in Exeter Cathedral, which were chipped away to such an extent that they might be said to be diminished and not restored.

Mr. Street observed, with respect to restorations, that the best thing would be to leave matters as much as possible as they were in 1550. If they were tooling away the stone at Lincoln Cathedral in the manner described, all he could say was that the sooner the dean and chapter were caught and tooled in the same manner, the better it would be for the church. While upon this subject he ventured to recommend the paper issued by the Royal Institute of British Architects, which was the result of much consideration by architects of experience, and was intended to convey instruction to restorers generally, in order to prevent them from doing mischief. A notable case of "tooling away" came under his notice a short time since. When removing the jamb of a window, set up in 1790, he came upon a jamb of fifteenth century work, and upon removing it another was found beneath it of thirteenth century work. Ultimately he was enabled to find enough stones to reconstruct an eastern triplet of the original design. As a general rule, therefore, he would recommend restorers to let well enough alone, and not to destroy things simply because in

their opinion they were old and unsightly. It was, he thought, sad to see the destruction of screens which was going on in several places, simply because the bishop or the archdeacon thought them too high. Some people who did not know better made war upon the screens because they thought it was desirable to see one clean sweep of everything in the church, from the door to the altar. The over-restoration of monuments and mural paintings was also much to be deprecated, and he thought it would be far better to leave those things as they were rather than to attempt their restoration in an ignorant or thoughtless manner. Indeed, he did not think we had any right to restore sculpture at all. He had himself on one occasion fished up a Crusader out of a farmyard. He found him short of a leg, but he put him up as he found him, and he believed very few people would detect the fact that he was minus a limb. At Worcester Cathedral he was sorry to find that they were tooling away the buttresses by an inch or so, which he regarded as a great mistake, as he generally found that in cases where the weather-face (so to speak) was removed the subsequent decay became much more rapid. Patching and repairing work which would last three or five centuries was greatly to be deprecated, but some people would continue to do so until nothing of the original remained.

The Rev. Mr. Williams said he could not agree with Sir Charles Anderson with reference to the "tooling" going on at Lincoln Cathedral. He had examined the work very carefully, and he could not see that any tooling had been done in order to get up a new surface on the work. They had used soap and water, certainly, and a rough scraper, but the sculpture had not been restored, while the ashlar had been preserved as much as possible. It struck him, however, as singular that when the restorations were made in the beginning of the present century, sandstone, brought all the way from Yorkshire, should have been used for the shafts when there was plenty of the original oolite of which the cathedral was built ready at hand. At King's College, Cambridge, the stone presented very much the appearance of that which had been treated as described by Sir Charles Anderson, but it had been carefully washed and repaired here and there when necessary. Mr. Williams subsequently introduced to the meeting Count De Vogué, the Syriac traveller, and invited him to describe the state of the chambers which he had examined in that portion of the East.

Count de Vogué observed that he was indebted to the work of the gentleman who had last spoken for much valuable assistance in his researches in Syria. Should the Christians ever again get possession of the country, the restoration of the churches to their original use would be a matter of little difficulty, for as a general rule they were still (owing to the climate and apathy in the matter of "restoration") in very good preservation. The Count then described the church of St. Simon Stylites, between Aleppo and Antioch, which he said was a cruciform building, containing, in fact, four churches, with a large open space in the centre. It was built in the fifth century, and was one of the most interesting churches in Asia.

After some further discussion, in the course of which the Chairman, referring to the mutilated crusader discovered by Mr. Street, threw out a hint as to whether strict conservatism had not been kept in view in the retention of the statue of his Majesty George II. in Leicester-square, the proceedings terminated.

THE APPROACHING HANDEL FESTIVAL.

THE approaching Festival at the Crystal Palace promises to be very satisfactory. The rehearsal will take place on Friday, the 23rd instant. This will include both solos and choruses, and the pieces selected will present great variety, the object being to make the rehearsal day an epitome of the three days of the Festival. The first day of the Festival will be Monday, the 26th, the "Messiah;" the second, on Wednesday, the 28th, will comprise a selection from Handel's best known and most popular works; and the third, on Friday, the 30th, will be "Israel in Egypt." The selection on the 28th will present many attractive features. Amongst other pieces it will comprise a selection from "Saul," commencing with "How excellent," and including the chorus, with Carillon's accompaniment, "Welcome, welcome, mighty king," the chorus, "Envy, eldest born of Hell" (which created so much sensation at the last Festival), and the famous "Dead March." This day's performance will also include the Nightingale Chorus from "Solomon," "May no rash intruder," and, as the 28th instant is the anniversary of her Majesty's coronation, the great anthem, "Zadok the Priest," written for the coronation of George II. in 1727, will be appropriately introduced. A selection from "Judas Maccabæus" will also be given, concluding with the popular chorus, "See, the conquering hero comes." Mdlle. Adelina Patti will sing "Let the bright seraphim" (trumpet obligato, Mr. Harper), and "From mighty kings." Besides "Sound an alarm!" Mr. Sims Reeves will sing the great song in "Joshua;" and Madame Sainton-Dolby, Mr. Santley, and other well-known artistes will take part in this and the other performances.

Some alterations in the construction of the great orchestra are said to facilitate hearing very much. It is proposed, too, to place large screens on each side of the great transept, transforming it into an inclosed concert-hall. Thus an old suggestion of the *Builder* is about to be realized.

The concert last Saturday was very satisfactory and charming: Mdlle. Lucca, in particular, ran away with her audience completely, and was forced to sing everything twice.

The gardens are more bare of flowers just now than we should like to see them, and all the vases scattered about have been emptied of their floral contents, to the detriment of the general effect. The gardens must not be neglected.

THE LANGHAM HOTEL, PORTLAND PLACE.

THE Langham Hotel, built by Messrs. Lucas, under the superintendence of Messrs. Giles & Murray, architects, was opened formally on Saturday, the 10th inst., when H. R. H. the Prince of Wales honoured the directors with his presence. The decorations were designed by Mr. Owen Jones, and carried out by Messrs. Graham & Jackson, who have supplied all the furniture. In our volume for 1863 (pp. 531, 532, and 533) will be found a view of the building and plan of the principal floor. We content ourselves, further, on the present occasion, with a detailed account of the kitchen arrangements.

THE KITCHEN OF THE LANGHAM HOTEL.

THIS kitchen is understood to be the largest in London, its dimensions being 54 ft. long by 48 ft. wide; and the scullery adjoining being 37 ft. by 19 ft. All around the walls are recesses, formed in various parts, in which the cooking apparatus is fixed. The first which attracts the eye on entering is the large roasting range, which is 8 ft. wide and 7 ft. high: the roasting-jack over this is driven by hydraulic power, having provision for cooking at least fifty or sixty joints at one time, and is very complete in its details. Passing thence, we come to a very extraordinary and spirited piece of work, consisting of a series of stoves in a semicircular form, fitted completely round the bay-window at the end of the kitchen: they are 30 ft. in diameter, and are for the preparation of the higher class of viands, under the especial control of the *chef*. They include a large hot-plate, with an oven for soufflets, entrées, &c.; several charcoal stoves; gas steaming-stoves, constructed so that they cannot possibly smoke; a large *bainmarie*, for keeping sauces hot, heated by steam; and another gas-stove for the large stockpot, which is kept at work during the whole night, in preparation for the next day's soups. Passing on, we come to the fish-cooking department, where we have the means for frying, broiling, and boiling any quantity that may be required: one large copper pan, heated by steam, is specially reserved for salmon and turbot, the largest of which can be placed whole in this apparatus.

In the stoves for cooking chops and steaks, the fires have all the draught striking downwards, to prevent the meat being smoked and blackened. On the opposite side is the large pastry-oven, and just at the back is the pastry-room, cool and well-ventilated.

Opposite to the large bow window is the serving window, whence all the viands are dispatched to the upper floors by means of an hydraulic lift; but before they leave the kitchen they are all brought to a serving table placed near, to be entered by the clerk in his book. This table, which is of bright polished iron, is 16 ft. long by 4 ft. wide, heated from end to end by steam and fitted with two *bainmaries*, one for soups and one for sauces, so that every dish leaves the kitchen perfectly hot: there are a whole series of hot closets besides, for heating plates and dishes, all fitted with steam chambers and pipes.

Passing into the scullery, we find a range of steamers for cooking potatoes, boiling hams, puddings, rounds of beef, &c., the excess steam being carried by a flue to the top of the building, and then we have a large hot-plate for cooking all sorts of vegetables. On the opposite side are sets of troughs fitted with hot and cold water for preparing the vegetables, washing up plates and dishes, &c. Another department for the scouring of the stew-pans, where the water is kept hot all day long, the large troughs and pans being fitted with steam jackets. In the centre of the scullery is a large closet heated by steam, and a table.

The grand table in the kitchen is 20 ft. long by 6 ft. wide, and has the top made of elm 6 in. thick. Some idea may be formed of the quantity of materials used in fitting up this kitchen when we state, that the total weight of the iron of which the cooking apparatus is constructed is upwards of twelve tons; and there is a complete system of underground pipes by which all the waste steam is collected and made to heat a tank holding 500 gallons, supplying hot water to all parts. The length of iron pipes used in the kitchen alone for steam, hot, cold, and waste water, exclusive of gas, is upwards of 3,000 ft. The fittings were all designed and manufactured by Messrs. Adams & Son, of the Haymarket, and erected by them in the building.

PARIS.

Two new thoroughfares, the Boulevard des Amandiers and the Avenue Lacuée are in course of construction in the east of Paris: these, starting from points widely distant asunder, intersect at the Eleventh Arrondissement, at a point not far from the Abattoir Menilmontant.

The Avenue Lacuée owes its name to General Lacuée, killed at the battle of Guntzbourg, in the Austerlitz (1805) campaign. It commences at the Pont d'Austerlitz, at Bercy, and follows the axis of the bridge, cutting across the Rues de Bercy and de Lyon, the Avenue Daumesnil, and passing under the Vincennes Railway by a bridge of considerable span; here it enters the densely peopled quarter of the Faubourg Saint-Antoine, through the mass of cabinet-makers' workshops where are manufactured the luxurious articles of Parisian furniture which find their way all over the world. In the passage of this avenue an ancient wall-fountain at the angle formed by the Rues Basfroi and de Charonne, has been made to disappear, having shared the fate of most of the old Paris fountains, now replaced by *bornes fontaines*. This, built under Louis XV., was one of the usual type of the period;—a brass mask, delivering the water from its mouth, enclosed in a semicircular niche surmounted by a triangular pediment. It is worth knowing, that the most ancient fountain of this nature now existing in Paris, is that at the corner of the Rue Maubuée, not far from the Hôtel de Ville: it was erected at the beginning of the fourteenth century.

The works of the new terminus of the Northern Line of France are nearly completed. Covering an area of 30,000 square metres (nearly 7½ acres), the building is composed of five principal parts; in the centre the great hall, on the left the departure saloons, and beyond that the lobbies; on the right the arrival saloons and the covered carriage sheds. This last portion cannot be commenced till after the demolition of the ancient station and the temporary installation of the service in the new buildings. The lateral façade adjoining the right pavilion consists in a series of arches resembling the system adopted for the great hall, and affording to the public ready access to the several arrival departments.

Four great thoroughfares are in progress to complete the group of new streets on the slopes of Chaillot. The Avenues de l'Alma, de Josephine, de Jena, and de l'Empéreur. This latter is the most important as it may be considered the prolongation of the Cours la Reine (that magnificent drive from the Place de la Concorde along

the river side towards Passy) as far as the Porte de la Muette, one of the central entrances to the Bois de Boulogne, and consequently the nearest road from the Tuileries or Paris proper to the ornamental waters and the Pré Catelan. In this unbroken drive, as it will be when finished, the length is six English miles. The first three miles from the Porte de Pantin, along the Route de Metz and the Rue de Lafayette, as far as the New Opera House, are in one single straight line. No finer opening exists in Paris than the Rue Lafayette for ready communication between the whole of the North of Europe (for the Northern terminus is in it) and the rest of the metropolis.

HINTS IN CONNEXION WITH LOCAL INDUSTRIAL EXHIBITIONS.

IF the Prince Consort had been alive at the present day, he would have felt great pleasure in the development of these institutions, which give promise of being permanent, not only in the metropolis, but also in the provincial towns of Great Britain. Throughout the civilized world; in the capitals of England, Scotland, and Ireland; in Paris, and elsewhere on the Continent, "Great Exhibitions," held at periods long between each, seem now to have become less frequently but as firmly established as the Christmas feasting at the festive season of the year.

The general result of all this development is satisfactory. In the first instance, it shows that there is a strong feeling in favour of gatherings of this description, that have been the means of originating and developing ideas; of enabling manufacturers to form companies, which will show the merits of their goods; and in these great gatherings there is a source of pleasure, either in one department or another, for all kinds of visitors. Many other important advantages might be mentioned, and not the least of these is the rise of the local Industrial Exhibitions in the London districts and elsewhere. There is, if we may judge from the present indication, a prospect of the opening of exhibitions of this kind in villages and districts, where there is only a small amount of population.

When looking with anxiety at the practical working of these exhibitions, we have noticed several hopeful results which lead us to expect better things in future. Amongst these may be mentioned the advantages which arise from persons of different classes meeting together, if only for a short interval; but in nearly every case the working men, whose benefit is chiefly sought for in connexion with these gatherings of themselves, and the articles of their own manufacture, have been too much pushed out of the management, not only of the getting up, but also of the direction and working of these exhibitions, the award of the prizes, &c.; and many of the best men of this class, whose manners, general intelligence, and right feeling, entitle them to fitly take their places of management on committees of this description, feel that, in too many instances, they have been overlooked for the sake of the appointment of persons who seek to distinguish themselves. There is nothing so unpleasant to us as to say what may be hurtful to the feelings of any one, or to give expression to ideas which may seem to reflect upon well-intended, and, to a large extent, useful, endeavours; but, in the end, plain truth, is of far more advantage than puerile and unmeaning praise. We have, therefore, somewhat unwillingly, said this much, and will also again express a strong opinion that, so far as the advantage of individuals is concerned, and as a means of advancing the reputation and pecuniary position of those who have displayed the articles produced by their skill and appliance, the results have not been at all satisfactory.

There are many reasons for this undesirable result, some of which may be arranged as follows:—

1. The neglect of exhibitors to endeavour to distinguish themselves in the branches of their own line of industry.

2. The expenditure of a large amount of labour on articles which have no particular use.

3. There is also the thought that, in the present state of the law of patents and copyright, ingenious inventions, &c., may be appropriated by other than their owners.

4. In the large towns, in the metropolis especially, there is a want of the opportunity of men meeting together who are engaged in similar branches of labour after the regular hours of work have passed, for the purpose of comparing their knowledge and endeavouring to direct their attention to the best means of advancing themselves and giving interest to these exhibitions.

There are many other considerations which come to mind; but, while thinking of these, we should not lose sight of the fact that these exhibitions are still but in their infancy, and allowance should be made for all the difficulties usually associated with new experiments. We must, however, mention that the committees will, for the purpose of ensuring future success, do well to change much of the present plan of arrangement and selection; for we doubt much the wisdom of the management which gives a prominent place and prizes to such matters as the pen-and-ink drawing which has so strangely roused the fear and anger of the Bank of England authorities, although, to many who have not given consideration to the higher principles and practices of the fine arts the production of a Chinese imitation such as this seems surprising.

However creditable to the patience and even the hand-skill of the producer, this is not one of those things which are likely to advance the welfare of Industrial Exhibitions. To many who do not know the mechanism for some of the stages of engraving on metals, drawing on wood, lithography, &c., the execution of the group referred to would seem to be one of much greater difficulty than it is. By means of tracing-paper, good transfer-paper, a finely-sharpened and firmly-leaded pencil, pens with the requisite varieties of point, and a well-mounted and closely-grained sheet of drawing-paper, a neat and steady-handed person, without artistic ability, might readily produce that which many persons would consider wonderful.

None can be more glad to see the useful development of art in any of its branches than we are, and in the present instance we do not write for the purpose of damaging the fame which the producer of the pen-and-ink drawing has gained; but it is our duty to look at such matters as this from a broad point of view, and in this case consider in what way industrial exhibitions may be benefited by the encouragement of works of this kind.

We trust that the time is not far distant when it will be a curiosity to find in England a workman who is deficient in the rudiments of education, and who cannot also perform at least the simple process of outline delineation of objects; but in the manner in which the generality of the Industrial Exhibitions are at present managed, it is not clear in what way this desirable end either has been or can be advanced.

In connexion with the schools of industrial art which have, under the management of the South Kensington directors, been established throughout the country, there are facilities for not only the display, but also the teaching of this mechanical art in its higher branches. There are also the various exhibitions in both town and country, in which artistic works of real merit are likely to obtain a fair amount of notice; and in many directions there are at present opportunities for fostering art when germs of the right kind have been shown to exist. It therefore appears that attempts of workmen verging upon what may be considered pictorial art, and having no application to the improvement of designs for the general forms, ornamentation, or colouring, of articles of manufacture, should be considered with particular care by committees having the kind of knowledge which will enable the members duly to appreciate such attempts; and in one department there should be gathered together all matters of delineation of value for the general purposes of art manufactures. Here might be displayed rare efforts of neglected genius which may be found in painting and sculpture.

But, as it appears clearly to us, in the Industrial Exhibitions, committees should not give especial encouragement to such matters as bank-note imitation, or to pictures, simply because they have been executed by a pork-butcher or a general-postman.

Even in an artistic way, there is much to be done in connexion with these local exhibitions. Take picture-frames, for instance; and let us see the workmen's ideas respecting them, and show not only their actual work in this way, but also display models and sketches. There are, also, the panels of cabinets, doors, &c., of rooms, or the cornices of ceilings, for which we should have designs. Let us see who can fashion us the most graceful and useful door-knocker, or bell-handle, or scraper; who can give us the best idea for an area railing, or a street lamp; and let our tin-plate worker, or tailor, continue to find delight in his sketching; but let him also, if he lives in London, take occasional holidays, or go on certain gas-light evenings and see at the South Kensington Museum how articles in his way have been fashioned and wrought formerly, not only here, but in Germany and elsewhere; and let us have his views, not only on paper, but also in tin or cloth. Our tailor might, perhaps improve his *cut* by examining the engravings of costume, which he will find ready access to in the print-room. There is great reform still needed in the style of men's wearing apparel; and hints for this purpose might be got in these places.

In the Great Exhibitions, it has been complained, the employers obtained all the credit, and the men were deprived of what was fairly their due. In the local exhibitions this is not the case, except in as far as the employment of large capital gives facilities for the completion of articles at reduced prices; and in the way of finish, in all parts by the subdivision of labour: but in the designing and working of many things the men have now afforded to them rare opportunities of distinction. Workmen who have for long been employed in the manufacture of articles of general use, have peculiar and often valuable views in connexion with them, and these it is most desirable to get gathered together. There is also the ornamental painter's work, in the imitation of woods, marbles, &c., the fashioning of letters, and other things which appertain to this trade. All these, and in the same way the results of the choice labour of other handicraftsmen, should be systematically arranged, not only with a view to distinctness, but also so that they might be readily studied by all interested in them.

Up to the present date the local Industrial Exhibitions cannot be said to have been fairly got into working order; but one principle in connexion with them should be, the reward of utility rather than of what has no especial use; and that the workman who, with ingenuity and skill, applies either ancient or modern devices, should, in such displays as these, be rewarded and meet with praise, rather than the amateur artist who spends time in the execution of matters which will neither raise him to the rank of a Royal Academician, nor assist him in any department of art industry.

There is much more to be said in connexion with this most important subject, but we will just now only remark further, that in the Industrial Exhibitions it might be found of great use to afford space for the selected works of boys and girls of the age of from twelve to fifteen years. By this means, some would be likely to discover the right bent of his or her talent, and get it launched into the proper current for its successful progress.

THE SHEFFIELD SCHOOL OF ART.

THE annual *conversazione* has taken place in the Arundel-street building. The visitors, owing to the changed season for holding the meeting, were much fewer than usual. Mr. Roebuck, M.P., and Mr. Tom Taylor, were among those present. Mr. Taylor, who distributed the prizes, said, in the course of his address,—If I were asked, as an outsider, whether the reproach of indifference to the claims of art still attach to your town, I should naturally appeal, in answer, to the contrast between the lugubrious trio of 1841, that party in a parlour,—all silent and damp,—with this brilliant assemblage, gathered within a spacious, commodious, and elegant school-building; these classes, attended by 250 students in all degrees of art, from its elementary rudiments up to the most elaborate branches of design; these proud records upon your walls of local and national honours achieved and prizes won; the rapid increase in those honours for the last three years, shown in a constantly rising influx of medals from seven to nineteen, till this year it stands at thirty-five,—a spring tide,—thirty being the maximum for any one school fixed by the regulations of the central department. Yet, when I come down to Sheffield, I do not find the local supporters of your School of Design hopeful, nor those employers, as a rule, enthusiastic in its support, highly impressed with its value, or sanguine as to its success. The former tell me that the reduction in the amount of Government aid hitherto given to

this school is, as they fear, likely to be seriously prejudicial, if not absolutely fatal to it; and this is, I am sorry to learn, very much the case with all the schools at the great centres of manufacturing industry throughout the three kingdoms,—at Manchester and Birmingham, at Stoke-upon-Trent and Newcastle-upon-Tyne, at Glasgow and Dundee, at Cork and Limerick. If we look at art as applicable to industrial production, it is evident from all, that a man honestly seeking information on the subject, can see, hear, and read, that the local sense of the value of art is not as yet sufficient to make schools of art self-supporting either by means of fees or subscriptions. The ladies of Sheffield show their sense of the value of sound education in art by attending these classes; but the sons of your manufacturers, those to whom knowledge of the principles of art is, we would suppose, essential to the superiority of their wares, and the rise of their reputation in the great market of the world, do not enter as students here. The manufacturers themselves, I am told, are lukewarm: they do not, it is said, see any direct benefit from the school: nay, I hear of some who actually punish their apprentices by not allowing them to attend the classes of this school; of others who do not scruple to say that they consider it an injury to themselves to educate a class of skilled designers, as it will deprive them of such advantage as they can now obtain over their competitors by securing the services of a solitary designer. When employers are thus short-sighted, have we any right to wonder or complain of labourers or apprentices that they do not see very far; that the artisans or apprentices who attend these schools are apt to show a mistaken sense of the object and value of the instruction given; that they want to be set at once to learn what will be immediately useful to them in their crafts and trades, and are vexed and disappointed, and apt to give up the school in disgust, if they do not get this special instruction at once?

Mr. Roebuck said,—There are things about and around us which no other age has seen. We travel now faster than men ever travelled before. We have compelled the power of nature to our use in a way that mankind never beheld before. But Mr. Taylor says the spirit of beauty is wanting. Now, I do not think that, altogether. I will take rather a warlike instrument—a rifle turned out from the armoury of Whitworth or Armstrong. Is it not a beautiful thing to look at? It is simple: it is designed to do its work with the least possible trouble; it is light and strong. What do you want more? I say that there is a spirit of beauty, but it requires an eye to see it; but that spirit of beauty, I think, does reign, ay, in the midst of England. I like to see men like my learned friend, who belongs to literature, coming down to give his assistance to the manufacturing power of England. It is a distinction which belongs to our age. We have had all the bright stars of literature—Shakspeare, Milton, Bacon, and Spenser,—and when I mention those names, I am sure my hon. friend will rather be anxious to be numbered amongst them; but they never aided mechanical art in England. I see this great advantage, when we can compel men like my friend to come down here among us—we working artisans—to aid us with that spirit of beauty which ought to live amongst us.

THE COMING ELECTIONS.

IT is unfortunately the case that, in the House of Lords, and the House of Commons also, there are but a very small number who have bestowed much attention upon the promotion of those social and sanitary improvements upon which the lives and health of a large part of the industrious and poorer classes of the country depend. In the House of Lords, the Earl of Shaftesbury,—whose personal labours have been attended with so much good,—finds it to be no easy matter to get a dozen noble lords to attend to matters on which so much depends. It would therefore be a great advantage if, in the approaching elections, we could get into the Commons House a few more men who would pledge themselves to bestow especial attention to the life and death question. Twenty additional men who could be depended upon in this respect would, by their cohesion and energy, have much effect on others. During the canvass which will be made, and the meetings which will soon be held throughout the land, it would be well for those who are convinced of the necessity which there is for more vigorous action in sanitary matters to ask candidates to pledge themselves to support, or, if needful, bring forward measures upon which the condition of the dwellers in both town and country so much depends. Out of about 600 members who will be returned, it would be easy by this means to gain a number of new men, who would with advantage join those whose exertions are well known to have been productive of much good.

NATURE AND ART.

LET never man, from Nature think
The sciences to part:
Creation is in every link
The prototype of art.

Earth is the fav'rite work of God,
By wisdom sphered in air;
For man design'd, from sea to sod,
Inimitably fair.

Are not the caves on Edin's shore,
Where tempests chafe and weep,
And music lulls the changing floor,
The temples of the deep?

The circlet of the showery sky
O'er the sun's radiant march,
Who shall its holy name deny?
Mercy's memorial arch.

The blending branches of the grove,
The vast stones piled in haste,
The roaring streams, and cliffs above,
Disruption's giant waste.

Primeval bridges of the earth,
Ere art arose were they,
The silent tutors of its birth,
And masters in decay.

By Nature summon'd to aspire
While scarcely art was known,
The rocky cave, the mountain's spire,
Was modell'd forth in stone.

The solid majesty of mass
In mystic Egypt shrined,
The ponderous skill of ornate class,
Growth of the Roman mind.

The beauteous harmony of line
By subtle Hellenes proved
The holy splendour of design,
By Gothic prelates loved.

The sumptuous dignity and grace
By Arab fancy wrought,
The multiples of form and space
The Asian's laboured thought.

All sprang from Nature, grave or gay,
By one unerring law:
The technic elements portray
How each creation saw.

From henceforth let not creed or caste
Man and his teacher part:
The future is reacted past,
And Nature nurtures art.

W. R. COOPER.

Working Men's College.

PROVIDENT INSTITUTION OF BUILDERS' FOREMEN AND CLERKS OF WORKS.

THE anniversary dinner of this institution took place on Tuesday evening last, at the London Tavern. Mr. Digby Wyatt presided. The usual loyal toasts having been proposed by the chairman, and duly honoured,

Mr. Taylor proposed "The Royal Institute of British Architects." Without the aid of that association neither he, nor those whom he addressed, would be able to pursue their callings as they now did. It consisted of a class of gentlemen whose ability and energy they all appreciated, and without the exercise of whose ability so many fine buildings would not be seen as are now rising in many parts of the metropolis. The members of the Provident Institution owed them much, and he was therefore confident that the toast would be well received. He asked them to associate with it "The Institution of Civil Engineers." They, also, by their talent and industry, had carved out a great deal of work for those whom the Provident Institution represented; and he was sure they would acknowledge the obligation by heartily drinking the toast he proposed.

The toast, which was coupled with the name of Mr. Burnell, was drunk with applause.

Mr. Burnell returned thanks. He said that both the Institutions,—the subject of the toast,—felt deeply the extent to which they were under an obligation to the Associated Foremen and Clerks of Works, for the co-operation which they extended to them, and the zeal and ability which they displayed in carrying out the important and onerous duties confided to them.

The Chairman said the next toast was one which he was sure would be cordially received. It was the health of "Builders, Contractors, and Merchants." He, representing professional men, and many of those whom he addressed representing the executive body, occupied two positions, between which stood the class which he called upon them to honour. They ministered to professional men, and to their *employés*, and each class derived advantage from them. Independently of that consideration, they had a special claim upon members of the Provident Institution, as that part of its funds which was derived from supplementary sources came from them. Their occupations demanded intellect, courage, energy, and enterprise, and those qualities he had found to be displayed by them in a remarkable degree. They were to a great extent the strength and stiffness of the nation, and therefore he had no hesitation in calling on those present to drink their health.

The toast was duly honoured.

Mr. Patman briefly responded.

The Chairman said he now came to the toast of the evening, before speaking to which he should express his sincere regret at the absence of Mr. Gilbert Scott, who was to have presided, and at the cause which rendered his absence unavoidable. Mr. Scott had the interest of the Institution entirely at heart, and had written him a long letter, stating the grounds on which he would have advocated its claims to continued and increased support. He had a great regard for the respectable body of which it consisted, and wished every prosperity to it, owing to the useful purposes for which it was founded. The president of the Royal Institute of British Architects had also requested him to express his regret at being obliged to be absent, and his sympathy with the objects of the Provident Institution. The toast he had to propose was, "Prosperity to the Institution;" and that prosperity was a thing that ought to be earnestly wished for by all right-minded persons, because the class whom it especially benefited was one that must be greatly respected. No man in a country which thrives by labour could look with a cold heart upon the best representatives of labour. Those whom the Institution included were picked from the working classes for their superior ability, and for the display of intellectual and other faculties which distinguished them from others, and they rose step by step until they were enabled to express the thought and conception of the professional man. They occupied a responsible position, and their labour was all essential for the success of the building art, an art which ministered to the well being of the vast body to whom it gave employment. The class which benefited by the Institution was one which demanded respect also for its providence. The very fact that they had associated themselves for improvement for educational purposes, for fitting themselves for the better discharge of the duties they have to fulfil, and for making provision for those accidents and mischances which might overtake them, proved them to be a thoughtful and a provident body. They had now, he was happy to say, only thirteen pensioners upon their books, and they had gathered together a sum of 3,000*l.* in order to establish the Institution upon a permanent basis. The Institution rested upon the first principle of humanity, namely, that of mutual assistance, the assistance of the weak, who were stricken down; extended to them by the strong and sturdy, who were happily enabled to hold on their way in the path of life. It was much to the credit of the Institution that its funds were solely directed to the purposes of charity. The subscriptions and donations which they received are not devoted to any extent to personal ends, but are sedulously applied to or set aside for the objects for which they were given. He spoke with diffidence of the class which composed the Provident Institution, for he could not but remember, that throughout his life they had taught him much. From builders' foremen and clerks of works much of the most valuable information he possessed had

been derived. Professional men were indebted to them for the all-important assistance they received from them; and as the march of mind went on, and the building art progressed, so would their duties become more onerous and their position more important. They now occupied posts of trust of no ordinary kind, and the providence which enabled them to look forward to a reasonable provision for themselves and those who were dear to them, was calculated to keep them in the straight path, and was thus a benefit to the entire community. He therefore sincerely and hopefully called upon them to give their cordial and practical support to the Provident Institution of Builders' Foremen and Clerks of Works.

The toast was coupled with the names of the governor and officers of the Institution, and was drunk with enthusiasm.

Mr. Henry Lee, governor of the Institution, responded.

The health of the chairman was subsequently drunk with all the honours.

During the evening a selection of music was performed, under the direction of Mr. Fielding. The vocalists were Miss Rose Hersee, Miss Eyles, Mr. Fielding, Mr. Shoubridge, Mr. Ransford, and Mr. Montem Smith.

THE ARCHITECTURAL ASSOCIATION.

THE usual meeting of the members was held on Friday, the 9th inst., at the House, in Conduit-street.

The chair was taken by Mr. J. H. Christian, the president.

Mr. J. D. Mathews (honorary secretary) read the list of names suggested by the committee as office-bearers for the ensuing year, on which a conversation ensued.

The Chairman, referring to the recent visit of the members of the Association to St. Alban's Abbey, said he regretted extremely not being present on the occasion, but that he was compelled at the last moment to forego what would have been an agreeable admixture of business and pleasure for an engagement of a purely business nature. He moved a vote of thanks to the Rev. Dr. Nicholson, for the facilities which he had afforded the members for inspecting the abbey.

The motion having been agreed to,

Mr. Mathews read a letter which had been received from Mr. Bazalgette, engineer of the Metropolitan Board of Works, stating the pleasure it would afford him at all times to allow the members of the Association to view the various public works under his charge. Mr. Mathews also announced that the annual dinner of the Association would be held on the 27th inst., and that they hoped before the session terminated to be able to visit either Montagu House, Whitehall, or the New India Office.

Mr. L. W. Ridge inquired how it was that the lectures at the Institute were so badly attended. Various reasons had been suggested to him, to which he would not more particularly refer except to say that occasions had occurred on which the persons who attended in the hope of hearing a lecture were informed that no lecture would be delivered.

A member said that no sufficient notice was given of the lectures, and that no intimation was given beforehand of the subjects.

Mr. Blashill said he had only attended one of the lectures, and that was an extremely valuable one in its way; but that, had he known what it was to be, he would not have attended it, because it ought to have been printed, so that it might have been studied with profit elsewhere.

The Chairman said, as he understood it, the lectures were not to be regarded as complete in themselves, but were intended more as suggestions to students as to the line of study they ought to adopt.

Mr. Mathews observed that the lecture he had attended contained an enumeration of about fifty books,—a circumstance which, so far from encouraging, was likely to deter a student. He believed that the members of the Association would have attended the lectures in greater numbers if the inducements held out had been greater. Moreover, on some occasions, when the members did attend on appointed evenings, they were informed that there would be no lecture, which was very like making fools of them.

Mr. Plumbe suggested whether the non-attendance at the lectures might not be accounted for by the circumstance that the members of the Association did not intend to go up for examination.

The Chairman said he was sorry to hear that gentlemen were likely to hold back from the examinations simply because they did not altogether like the manner in which the Association had been treated by the Institute. It would be like biting off their noses to be revenged on their faces. He recommended them by all means to go in for the examinations; for if they lost the present opportunity, they might find that after they got into practice no time would be afforded for going up. With regard to the Institute, he confessed, for his own part, that he was far from satisfied with the manner in which the memorial of the Association had been treated by that body, and he recommended that some further correspondence or communication should be opened on the subject. He had reason to believe that they had now some friends in the council of the Institute who would get a hearing for their memorial; for it was quite clear that when it was presented last session, it had been received, but not taken into consideration. There was another subject on which he desired to throw out a suggestion, and that was, that greater anxiety should be evinced in future by the members to take part in the discussions of the Association. Possibly the forthcoming dinner might do something towards removing the reticence of which he complained; as the more the members knew of each other, the less difficulty they would have in speaking on the subjects which they were called together to discuss. He hoped, therefore, that there would be a good attendance at the dinner.

The Chairman stated that as the meeting on the 23rd inst. would be the last of the session, he hoped that members in arrear of their subscriptions would pay up, in order to prevent the unpleasant necessity of posting up their names as defaulters.

Mr. J. W. Penfold then read a paper on "Metropolitan Improvements."

The subject for the next class of design will be, "Interior Perspective;" and on the 23rd inst. Mr. E. G. Turner will read a paper on "Organ Cases."

A NEW FIELD FOR LANDSCAPE-PAINTERS.

SINCE the French Emperor's visit to his Algerian province, the accounts of its rare and picturesque beauty are coming from many pens,—and most tempting some of them are,—for, besides the historic interest of the locality, the picturesque charms of the scenery appear to be remarkable. On this point Mrs. Rogers, in a book which she has recently written, says: "A warm genial spring seems really to have set in. To-day we discovered one of the most romantic walks we have yet found in our rovings;—in a short, or rather direct, cut to the Bouzareah, through gorges and glens, ascents and descents equally steep, and with views of exquisite beauty, a gurgling stream descending from its mountain-source—flowing over a grey rocky bed—amidst rich foliage of overhanging banks, transported us in fancy, as we stood on the narrow bridge by which it was spanned, to some of the lovely dales of Derbyshire, till some dark, glossy, richly-laden orange-tree dispelled the illusion; and then a sudden opening outspread before us, as with the enchanter's wand, one of the beautiful bays around Torquay, till the cactus and the aloe, and the mosque-like building surmounting the grey stone slope, recalled us to Africa. Cork-trees were in the hollow; and ascending the old Roman road, if such a narrow overgrown path ever really were so, we noticed on the opposite side of the ravine the picturesque effect of an orchard of fig-trees denuded of leaves, and, with multitudinous stems and twigs so white as to appear pasted against the bright green background, they looked like huge branches of white coral. The fields are now covered with the sweet jonquil and the purple iris; but hitherto we have searched the hedges in vain for the snow-drop or the primrose. The mignonette is finer than ours; but the daisy, although larger than those met with in Great Britain, has not the crimson tint; the hawthorn has whitened the hedges and scented the air, and strange flowers are peeping up in anticipation of the floral glory of the summer. Exquisite views meet the eye on the right hand and on the left, and from the heights the scenery is very grand: on one hand are the dark frowning chains of the Atlas, and on the right the view stretches towards Gibraltar, which was, however, far beyond our ken; but we saw Sidi Ferruch,—the landing-place of the Gallic conquerors,—part of the western plain of the Metidjah, and all those promontories, and inlets, and bays so dear to a painter's eye, especially when bathed in the lustre of the setting sun as we saw them now. Turning from the left we again caught the blue sea calmly rippling on in front of the Hessian dey and the Hanmah, encircling in the embrace of Cape Matifon, which one could hardly believe to be about fifteen miles from Algiers; the snow-tinged hills keeping stately guard around, on every side opened out a series of pictures. Why do not more of our R.A. artists come out here? Do they really know that it is but four days from London? Above all, how richly would be their trouble repaid. Poor Mr. Egg, R.A., indeed, came here, but in an advanced stage of consumption, and only to find a grave. His widow is here at the present time, having undertaken the long journey, all alone, for the purpose of erecting a tomb to his memory."

Some of the Roman remains seem to exist in the most perfect condition. In England the incessant changes, the perishable nature of the climate, &c., have destroyed much that the great conquerors left of their handiwork; but in Algiers, houses are to be found perfect in all parts, in which the most elegant ornamentation and the various appliances for luxury and comfort are still to be seen.

BRITISH STAINED GLASS.

IN continuation of the articles on this subject in your last two numbers, allow me to submit some remarks on the most noticeable defects of modern British glass, and on what appears to me to be their natural remedy. I should premise, however, that all the defects which I shall mention may not be found in *all* the stained glass of British manufacture; but, more or less, the remarks apply to every specimen I have yet seen.

1st. Our stained-glass artists, as a rule, use too much blue.

2nd. That blue is often of a very bad quality, being either semi-opaque, or otherwise objectionable in tone, and much inferior to the beautiful colour used by the artists of Munich, Dresden, and other Continental manufactories.

3rd. Too much white glass is used; and this, with the objectionable blue, gives a hard, harsh, and cold aspect to all the window.

4th. The outlines are very frequently spoiled, and the effect disturbed by blotches of coloured drapery cutting the figures horizontally or obliquely, and causing it to be a matter of no slight difficulty and considerable ingenuity to trace each figure from head to foot. Another objection connected with this is, that often every object is equally emphasized, and consequently figures or accessories intended to be in the background appear on the same plane as those in front, and so add to the confusion.

5th. Flesh is painted too white, or a dirty yellow.

6th. Want of concentration of effect: equally light parts are distributed in the most meaningless and random manner all over the window, especially in large subjects.

7th. Too many colours are used in almost equal proportions.

The preceding are, I believe, the chief defects in the manipulative part of our British glass; but the faults in the conception and design are more heinous. Not to mention the absurd imitation of the worst parts of Mediæval work practised by some manufacturers, nor that puerile conceit which gives a metallic stiffness to the draperies and figures, and calls it "Mediæval spirit" and "feeling," there are sillinesses perpetrated in the name of Religious Art which are only a ludicrous parody of art: expression is in many cases totally ignored; and on faces which are intended to represent divine or glorified beings, the meaningless everlasting stare of the wax doll is substituted. Most of the works give evidence of a very desultory training on the part of the artists: the aim seems to be neither high nor very decided, and the designs smack more of the manufacturer than the artist.

The stained-glass makers may object that they could not get a sufficient remuneration for their labour were they to study their designs more fully; but works of merit will command their own price in this as in everything else; and if the British glass were equal to that of

Munich, no one in this country would refuse to give home talent the preference. But, compared with Munich, Dresden, and some other Continental glass, our own is lamentably behind; and, notwithstanding "J. H.'s" perhaps truthful sneer at the thinness of the Munich glass in Glasgow Cathedral, I know nothing that would tend more to raise our own art than the zealous study of the magnificent windows in that building: faulty some of them may be, but they have at least the merit of telling their story boldly, simply, and without affectation; and it would be difficult to surpass the broad, rich, and luminous draperies, the quiet brilliancy of the skies, and the grand, dignified, and thoughtful heads, which are their leading characteristics. Next to studying under the masters who produced these works, the studying of the works themselves would be, I believe, the surest way to the attainment of those excellences which are as yet unknown in British stained glass.

Your correspondent "J. H." gives it as his opinion that a cool tone should be preferred in stained glass: I fancy that a warm mellow light is the most agreeable—at least, in a building such as a cathedral, where the cool grey of the stone wants something to enrich it. I had the advantage of comparing the effects of the warm and cool treatments in two windows which stand side by side in the crypt of Glasgow Cathedral: one is from Dresden (I think); and though only a single lancet light, is the most beautiful piece of colour I have seen. The subject is "Christ and St. Peter on the Sea;" and—so far as I can recollect—a fine red and a delicate straw-colour are used for the draperies; the border is formed by a small gem-like design, in which green, relieved by red, predominates. The whole effect is exquisitely rich, soft, and warm; and it is with an inward shiver that we step from its light into that of a "very cool" St. James of British manufacture, in which blue drapery, "cool flesh," and neutral colour have a disagreeable pre-eminence.

In conclusion let me say, that if I have written somewhat harshly of our infant school of stained glass, it is because I feel that our country—with a school of painting which owns no modern superior, and with sculptures almost rivalling the antique—ought not to be behind in anything which demands harmony of colour and beauty of form.

J. MOYR SMITH.

TRAPS TO RAINWATER PIPES.

IN a season of drought the traps at the foot of rainwater stack-pipes frequently become quite dry, and if there are dormer windows in the roof, the gases from the drains are drawn off by the stack-pipes, and flow into the windows, and from the attic rooms find their way into the whole house. With a high house it is not an easy matter at all times to let water into the dry traps. Last summer I thought upon a very simple plan which answers admirably, and gives no trouble. About 2 feet from the ground I had a hole made in the stack-pipes, and inserted a plug with a screw thread upon it, and with a square head. Whenever it is required to fill the traps the plug is withdrawn, and water poured in from a common watering-pot. Deodorizing fluids can by this means easily be sent into the traps, and into the drains. The plan is simple, and although very efficacious, is not in any way costly.

WALTER FERGUS, M.D.
Medical Officer of Marlborough College.

*** Particulars were given in our pages not long ago of an improvement in rainwater-pipes, with a view to the remedy of the evil complained of by Dr. Fergus.

HOW MAKE STONE IMPERVIOUS?

SIR,—I have just been called upon to remedy some defects at a parsonage-house, built four years ago. The house stands on an elevated site, facing south-west, and in wet weather the rain penetrates quite through the window jambs and spandrels over, which are of freestone, nowhere exceeding 8 inches in thickness.

Can any of your readers inform me of a method of rendering the stone impervious to rain, without altering its appearance externally? Oil paint would have the desired effect, but would spoil the appearance of the stone. The occupier has tried oil colours internally, but without success, although he says the stone was perfectly dry when painted.

W. B.

SENSE IN DESIGN.

WHEN architects adopt the Antique or Mediæval as their models, I wish they would reflect a little on the reasons for different materials being used together. For instance, the iron bars through open-work wooden gates were only used to draw them together, and so strengthen them; but now we often see the iron bars added for ornament where they could be of no use.

As an instance of this, I inclose you a rough sketch of the gate of what appears to be a very costly entrance, lately erected near Belfast. The gate is of very massive pierced woodwork; but those handsome twisted iron rods, with *fleur-de-lis* ends, are quite out of place, for no one could screw them in with that twist in the upper part of them; and if not of use to strengthen the gate, they should not be there.

Pardon these free remarks from an

AMATEUR.

RAILWAY MANAGEMENT.

THE late accident on the Great Western Railway, near Shrewsbury, is another proof of the great defect in the present system of starting long and heavy trains without sufficient break power.

Put forty carriages together filled with passengers, with a break at each end, and start them up a heavy incline, and the chances are, one of the coupling-irons breaks, and thirty of the carriages run back, which the hindmost break will not hold; the same as occurred some time ago with an excursion train filled with school-children, out of Birmingham. Do the same thing with forty carriages as the Great Western did a short time since, and send them down a heavy incline, like the one at Holloway, and the chances are that they run into King's Cross, and into the Pancras-road.

Do the same thing with forty carriages as the Great Western have now done, and send them down a heavy incline, with rails out of repair at the bottom, and the chances are that the carriages run down at full speed, and smash up. Whereas, if the train had been an ordinary train, and passed slowly over the rails which were temporarily laid, the chances are they would have gone all safe. But it is of no use the press writing; it is of no use even for her Most Gracious Majesty to write. Your paper was the first to point out, in the case of Mr. Briggs's murder, that such might be remedied by having glass partitions in the carriages, and it was taken up by the other papers; but nothing has been done. Passengers' lives are reckoned up in the working expenses; and nothing will be done till a law is passed making all railway carriages and trains come under inspection, the same as all other public conveyances; the same as cabs, omnibuses, and steamboats; and duly licensed, *as fit and proper, and to carry so many and no more;* and that every train with ten carriages shall have a break and guard at each end; and every increase of ten carriages over that number shall have an extra break, with an extra guard; and that a train shall not consist of more than a certain number of carriages. Also, that every railway train shall be compelled to run two trucks, either empty or full of goods, next the engine, so as to receive the concussion in case of accident.

Railway companies do nothing unless compelled by Act of Parliament; and that they will try and evade, the same as they did with the closed carriages of the Government trains, by having wooden shutters and a skylight in the roof. But, under proper inspection, the same as cabs, and enforced by a heavy fine, we might then travel with comfort and safety.

R.

OBITUARY.

The late Mr. Lightly, Architect.—A very amiable, clever, and unassuming young architect has just now been called to a better scene,—Mr. William Lightly, the coadjutor with Mr. I'Anson in the restoration of the Dutch Church, Austin Friars, of which we gave a view a few weeks ago. Mr. Lightly, who was a pupil of Mr. I'Anson, had acted for some time as the Honorary Secretary of the Architectural Photographic Society, and had lately commenced to edit a volume of Photographic Views, the first few parts of which that have already appeared were noticed in our pages. Decline was the cause, we believe, of his regretted premature decease. He was a Fellow of the Institute of Architects.

GREAT MUNDEN CHURCH, HERTFORDSHIRE.

THROUGH the exertions of the Rev. C. W. Maude, the rector, and the liberality of the few holders of property in the parish of Great Munden, near Ware, funds have been raised to do some of the works much needed at the church. The building dates from the Norman time, and has some remnants of the architecture of that period in the shape of a north doorway and part of the chancel arch. It has been altered in various ways, and, with the exception of the chancel, which was repaired a few years ago, is in a miserable condition. It is proposed to reseat the nave, put on a new roof, and restore the stone-work generally. Tenders are now being invited. Messrs. G. & H. Godwin are the architects.

THE SEWERAGE OF KINGSTON-ON-THAMES.

THE Conservators of the Thames sought to obtain an injunction to restrain the Corporation of Kingston from discharging the sewage of that town into the Thames under a new scheme of drainage, by which the existing cesspools are to be discontinued and one main intersecting sewer constructed with an outfall into the river a little below Kingston Bridge. The case made by the information and evidence in support was in effect that the increased quantity of sewage would in time cause an offensive deposit in the river, pollute the water for bathing, boating, fishing, or drinking purposes, be injurious to human health, and so interfere with the enjoyment of the public in the use of the river as to create a public nuisance.

The Vice-Chancellor, in giving judgment, after admitting that such a nuisance might be so committed as to authorise an injunction to stop the works, was of opinion that the existence or such a nuisance had not been proved on that occasion. Further than this, some means of defecating or deodorizing the sewage might be applied before the nuisance actually arose. Was he, then, to stop the works of the defendants on a mere case of prospective apprehended nuisance? The Court would have full power to deal with the matter when any case of actual nuisance arose, and the proper course would be to dismiss the information, such dismissal being prefaced by a declaration that the Court was of opinion that the evidence did not establish the existence of any nuisance in respect of the works executed or intended by the defendants, or any case for the interference of the Court. The order would be without prejudice to any future proceedings on the part of the Attorney-General in case the works should occasion a nuisance; and under the circumstances, it was not a case for giving costs.

THE SEWERAGE OF GREAT CROSBY.

THE ratepayers of Great Crosby, Liverpool, at their meeting on the 9th, had before them a plan for drainage of the district, by Mr. Clarke, their surveyor, supported by Mr. Thorburn, of Birkenhead; and a plan by Messrs. Reade & Goodison, strongly supported in opposition to the first, by Mr. James Newlands, of Liverpool. Mr. Newlands said he estimated the first would cost 8,500*l.*, Messrs. Reade & Goodison's 5,100*l.* After considerable discussion Mr. Clarke's plan was adopted.

THE SMOKE NUISANCE.

SIR,—In your last impression there is an article, signed "R. T.," on the subject of the removal of the smoke nuisance. Your correspondent, in his suggestion, seems to have overlooked the now established fact, that by passing smoke over a red-hot fire it is not the smoke itself that is consumed, but merely that portion of it called soot. The noxious vapours, such as creosote, sulphuric and carbonic acids, &c., that also form part of the smoke, are still allowed to escape into the atmosphere, and really do more harm than by being combined with the soot, which partly neutralises the bad effect these gases would otherwise have.

The only effectual method is to prevent *any smoke at all* from going into the atmosphere. This can be effected by a very simple apparatus which I have invented, but which I hope you will excuse me from describing, merely saying that it was pronounced by one of our eminent engineers—Capt. Grant (the inventor of the army pontoon and cooking apparatus)—to be "the simplest and most effective apparatus he had seen." I took it, some time since, to Lord Palmerston, who expressed himself highly pleased with it, and said, that although he could not help me with it himself, he would do what he could to enforce the law in regard to its use, if I could have it brought out. It would require a much larger sum to give it a fair trial than I have at my command.

W. H.

THE BUILDING TRADES MOVEMENT.

Wolverhampton.—The strike of the bricklayers still continues, and there are no apparent signs of an adjustment of the difference. On Thursday before last there were only 25 bricklayers left in the town, out of 180. At a meeting of the masters they resolved on a series of rules under which they would engage bricklayers. These rules, with few and unimportant regulations, simply embodied the terms which they had offered the men at their conference, and which the men then rejected, and which those that remain in Wolverhampton say they are equally determined to reject now. They offer 5½d. per hour as wages. These rules refer also to the labourers, who are offered 3½d. per hour. They demand 4d. an hour; and it is estimated that perhaps 100 are at work at that price. The result of there being little or no bricklaying is that the plasterers and carpenters are getting worked out and reduced to forced idleness.

Bradford.—The masons' labourers now are out on strike. The number of hours of labour at present is 50½ hours per week, a reduction having recently been yielded, and the men are now seeking an advance also of 1s. per week, making the wages 20s. per week, instead of 19s. A strike on the part of the operative joiners, for an advance of wages, also seems inevitable.

Leeds.—The strike in the Leeds building trade was terminated by a friendly arrangement of the matters in dispute. The men will receive an advance of wages, but the hour system, which the bricklayers have strongly opposed, is to be adopted both by the joiners and bricklayers, and the bricklayers' labourers. The two former are advanced a halfpenny per hour, and the latter a farthing, the wages for joiners being now 6d. per hour, and for bricklayers 6½d.

Darlington.—The painters are on strike: they demand an advance of 2s. per week, summer and winter; and to leave work at one o'clock on Saturday, instead of four, as previously. The brickmakers have given notice that they will strike, unless the half of Saturday be allowed them.

Middlesbro'.—The Middlesbro' ironmasters have, in answer to a requisition from their *employés*, agreed to give them a half-holiday in the week, the works to close in future at one o'clock on Saturday afternoons, instead of four, as heretofore. The privilege has been granted for six months. If at the end of that time the masters see that the men have not abused the privilege, it will be granted altogether. The men's wages will continue the same.

COMPENSATION CASES.

The Holborn Valley Improvement.—At the Lord Mayor's Court last week, before the Recorder and a special jury, there came on for hearing a compensation claim in respect of the Holborn Valley, made by Messrs. Lloyd, tobacconists on Holborn-hill, against the Corporation of the City of London, for their premises and business. Several witnesses were called in support of the claim, which was for about 12,000*l.* A sum of 3,153*l.* was agreed upon for the leasehold interest in the property, and the principal question was as to the business and the removal of the stock to new premises near Gray's-inn-road. The receipts were about 25,000*l.* a year, and the gross profits from 9 to 40 per cent. on a certain class of goods. The stock would be deteriorated by the removal. It was proposed to give evidence as to a fair sum for such a business, but the court declined to receive such evidence, and Mr. Cronin and other valuers in attendance were not called. A conference took place, which ended in a settlement for a sum of 7,350*l.*, including the value of the leasehold property.

Marson v. *The Metropolitan Railway Company.* In this case at the Sheriff's Court, before Mr. Humphreys, the claim was 8,195*l.*, and made by Mr. Marson, as the freeholder of the Cobham's Head, Coppice-row, Clerkenwell. It was supported by Mr. Cronin and other gentlemen on the ground that the house had been closed for some years, and if it had not been closed the premium for the place would have been 4,500*l.* On the present occasion witnesses for the company were examined. It was denied that the works of the company had caused the house to be closed. There had been some little damage done to the property, but the extent was about 100*l.* The house was very old, and the best course would be to pull it down and build another. Mr. Jay, the contractor, was called. He was answerable for damage, and he had paid the amount and done the repairs. He purchased the lease and had not opened it as it had only two years to run, and the expense would have been considerable. The coroner, in placing the case before the jury, said the question was whether the injury done to the property was by the works of the company. The house had been closed by Mr. Jay and not by the company. No doubt it had lost its *prestige* by being closed, but the question was whether the company were liable to the extent alleged. No doubt they were liable for the structural damage done by their works, but that was only to an extent of about 100*l.* Witnesses had been called on both sides, and it was admitted by all that the house had better be rebuilt. The question was whether the works of the company had done the damage. The house was an old one, and had been closed by Mr. Jay, who had purchased the lease. The jury would consider the evidence as presented on both sides, and say what in their opinion the claimant ought to recover. The jury retired for some time, and on their return assessed the compensation at 500*l.*

An unprejudiced correspondent who was present, writes to us to ask whether Mr. Jay did not in reality represent the company?

Wall & Robson v. *The London, Chatham, and Dover Railway.*—At the Lord Mayor's Court, this compensation case was investigated by the Recorder and a special jury. The claim was for a freehold house and land, 48, Ludgate-hill, the premises having been pulled down on account of the bridge on the north side. The claim was for 10,000*l.* The rental was valued at 450*l.* a year, at twenty-two years' purchase. Mr. Bovill, Q.C., who appeared for the claimants, took occasion to allude to the state of the law on railway compensations, and complained that there were many extra expenses which were not allowed on taxation, and it was an additional reason why jurors should give ample compensations. Until the Legislature interfered there would be no remedy. Mr. Lloyd, for the company, called several witnesses to show that the value was under 6,000*l.*, and the rental only 250*l.* a year. The jury, after a long investigation, awarded 7,550*l.*

Books Received.

The Grammar of Ornament. By OWEN JONES. Illustrated by Examples from various Styles of Ornament. London: published by Day & Son.

WHEN the costly folio edition of "The Grammar of Ornament" was first published, we expressed strongly our admiration of the work, and offered our congratulations and thanks to Mr. Owen Jones for the manner in which he had carried out the idea. The book was at once accepted, as well supplying a want, and is now out of print, notwithstanding the large price at which it was necessarily published. The company which has since been formed to carry on Messrs. Day's business have now wisely issued a new and cheaper edition,—an edition not made cheaper by any curtailment or diminution in worth, but by a reduction of the size of the plates; and the cost is thus brought down so as to place the book within the reach of a much larger number of persons than was the case before. The publishers only speak the truth when they say that,—"The 'Grammar of Ornament' has not only been adopted as a class-book in all the Government schools in this country, but also by the principal schools of the Continent, where the importance to art of this invaluable collection, and of the principles explained in the text, by which Mr. Owen Jones has sought to guide the student to its use, has been fully recognised and honoured."

The several plates have been proportionally reduced by the photographic process, through the care of Mr. Francis Bedford, who so skilfully conveyed to stone the original drawings of the folio edition. In some cases, where the general scale of reduction was unadvisable, the examples forming a plate in the original have been retained to a larger scale, and spread over two plates; thus giving, on the 112 plates of the present edition the whole of the material contained in the 101 folio plates of the original work. Without the aid of photography and other mechanical appliances, the perfect reduction we now have could not have been obtained but at a cost that would have prevented the publication.

The text, with all its woodcuts, is complete as in the folio edition, and consists as before, of twenty chapters, treating of,—The Ornament of various Savage Tribes, with 3 plates; of Egypt, 9; of Nineveh and Persia, 3; of Greece, 8; of Pompeii, 4; of Rome, 3; of Byzantium, 4; of the Arabs, 3; of the Turks, 3; of the Moors, 8; Ornaments from Persian MSS., 6; from the Indian Exhibitions of 1851 and 1855, 9; the Ornament of the Hindoos, 3; of the Chinese, 4; of the Celtic Races, 3; of the Middle Ages, 9; of the Period of the Renaissance, 10; of the Elizabethan Period, 3; of the Italians, 6; a series of Leaves drawn from Nature as Models of Ornament, 10; and Illuminated Title-page.

The author has endeavoured in these several chapters to define the apparent origin and trace the development of the several styles of ornament. He then proceeds to ascertain the laws which govern their composition; both those which are general to all styles and those which are peculiar to each.

Of course there are points in the various essays accompanying the illustrations of the different styles with which we do not agree. Take the following observation, for example, on which we happen to stumble in the chapter on Greek Ornament:—"In the well-known honeysuckle ornament it is difficult to recognise any attempt at imitation, but rather an appreciation of the principle on which the flower grows; and, indeed, on examining the paintings on the vases, we are rather tempted to believe that the various forms of the leaves of a Greek flower have been generated by the brush of the painter: according as the hand is turned upwards or downwards in the formation of the leaf would the character be given, and it is more likely that the slight resemblance to the honeysuckle may have been an after-recognition than that the natural flower should have ever served as the model." Now, the resemblance is anything but "slight," and that the original flower did originally serve as the model we feel no doubt; but the fact obviously is, that the ornament was in constant use by the Assyrians, and was carried on and immensely improved upon by the Greeks, owing nothing of its origin to the brush of the painter. However, we are not now to review the book. We would simply say that "The Grammar of Ornament" is a work of great value, and we applaud and recommend for a wide circulation the new and cheaper edition that has just been published.

Elementary Drawing Copy-Books, for the Use of Children, from Four Years old and upwards, in Schools and Families. Compiled by a Student certificated by the Department as an Art-Teacher. London: Chapman & Hall.

THESE copy-books are seven in number, and are intended to be used in the same manner as the ordinary writing copy-books; that is, the copy, being set at the side of the page, is to be copied on that same page, either below or on a line with the copy. Books 1 and 2 consist of horizontal, perpendicular, oblique, and curved lines, as letters; 3, geometrical figures and ornaments; 4, objects; 5, leaves; and 6, birds, beasts, &c. Simple instructions are given on the covers. The price is small. We have no doubt they would be found useful, not merely for children, but by adults who may wish to obtain some facility in copying objects. With good will and perseverance considerable progress might thus be made.

VARIORUM.

Hardwicke's *Science Gossip.* London: Hardwicke. No. 6, for June, contains chat on various subjects in zoology, entomology, botany, microscopy, geology, piscatology, &c.; and sustains its position and its interest as a monthly medium of interchange and gossip for students and lovers of nature.——A Report on the Condition of Journeymen Bakers of London, by the Standing Committee of the Department of Economy and Trade of the National Association for the Promotion of Social Science, has been issued by the society, at 1, Adam-street, Adelphi, London. It states that much good has been done by the new Act, although it cannot directly reach the subject of adult labour and night-work. Bakehouses were found by the inspectors to be frequently in a foul state most unpleasant to think of, and which, we should fancy, must greatly promote the interests of machine-making bread companies. The journeymen bakers of London appear to be looking a little more closely to their own interests than the poor fellows have heretofore done. An amalgamated union of operative

bakers has been formed, for the purpose of obtaining an abridgement of the hours of labour and the abolition of night-work. They have a small room in 13, Rolls-buildings, Fetter-lane, which they are now desirous of extending, as they find it inadequate for public meetings, and they are unwilling to resort to the general but most pernicious practice of workmen meeting in public-houses. We hope some good Samaritans will help them towards the very commendable object which they have in view. They also aim at having a home for young men from the country to lodge in till received under the roof of a master, so keeping them also out of the lowest public-houses, to which they are now generally obliged to resort.

Miscellanea.

THE THEATRES BILL.—Mr. LOCKE'S Bill has been abandoned.

MADLLE. ROSA BONHEUR.—This distinguished artist has received the Cross of the Legion of Honour. It is the first time it has been bestowed on a woman unconnected with the army.

CAUTION AS TO THE CONSTRUCTION OF "LIFTS."—At the Grosvenor Hotel on the 12th inst., the beam which suspended the machinery of the lift gave way, and the ascending-room, with persons in it, was precipitated to the bottom. One of the porters was killed by the counter-weight falling on him, and a gentleman's servant had his leg fractured.

MONUMENT IN THE CITY OF LONDON AND TOWER HAMLETS CEMETERY.—A monument has been erected to the memory of the infant daughter of Mr. Josh. Westwood, Tredegar House, Bow, after the manner of an Eleanor's Cross. The height is about 30 ft., and the whole is built of selected Portland stone. It is inclosed by an iron fence. The floors are laid with Minton's ornamental tiles. The architect was Mr. John Moxon, of Bow.

THE WORKING MEN'S COLLEGE.—Great want of room is felt. The drawing-class, one of the largest and most efficient of all, has to complain of a most unwholesome atmosphere, and of want of space for their regular work. Every other is similarly crippled in proportion to the numbers which frequent it. So the council are driven to the necessity, which they have always avoided as much as possible, of begging help from the public generally. They hope that they may set up a building suitable for their present purposes, and capable of further enlargement, at the expense of 1,000*l*. For this object they now seek subscriptions.

CONVERSAZIONE OF THE SOCIETY OF ARTS.—This society held a *conversazione* at South Kensington on Wednesday evening, which was most numerously attended. Mr. W. Hawes, as chairman, received the visitors. The new Raffaelle Room and Sheepshanks Gallery were open; and these, as well as the rooms containing the exhibition of miniatures, were thronged. Two bands were in attendance—that of the Coldstream Guards and that of the Royal Artillery. One of these was stationed in the Cartoon Gallery, and the other in the new North Room, near to which refreshments were served. The miniatures appeared to be objects of especial attraction. The arrangements reflect credit on Mr. Le Neve Foster, Mr. Davenport, and the officials of the South Kensington Mnseum, by whom they were made. The evening was one of unmixed satisfaction.

ART-SCHOOLS AND THE COMMITTEE OF COUNCIL ON EDUCATION.—There has recently been issued the copy of a minute of the Committee of Council on Education relative to the art-schools. On the 1st instant the consideration of the memorial from various schools of art was resumed, and the Council agreed to modify the arrangements, consenting to resume the payments of building grants and grants for examples, but declining to revert to the system of payment by certificates. They do not consider that the art-teachers come within the provisions of the Superannuation Act, 22 Vict., c. 26; but they will increase the amount of the payments proposed in the schedule appended to the minute of February 9, in the hope that certificated art-teachers will earn payments equivalent to the value of their certificates. The schedule referred to is cancelled, and another, which is given in the return, is substituted for it.

STOPPAGE OF THE NATIONAL WALLACE MONUMENT WORKS AT STIRLING.—The tower has reached the height of 155 ft. but funds are awanting, and the committee have resolved to suspend building operations, and dispose of the plant and materials for the purpose of liquidating existing obligations.

LAYING THE FOUNDATION STONE OF THE HARTLEPOOL RESERVOIRS.—On Thursday last week, the ceremony of laying the foundation stone of the new reservoirs in connexion with the Hartlepool Gas and Water Company was laid. The reservoirs are situated near the village of Hart, at an elevation of 170 ft. above the level of the sea. They are capable of containing 25,000,000 gallons of water, and are supplied by a spring which is estimated to fill the reservoirs in twelve hours. The supposed cost of the works is 12,000*l*.

GALWAY.—The Atlantic Sawing, Planing, and Moulding Mill, recently erected by the firm of Messrs. Cloherty & Semple, has been set agoing. The mill is a large edifice. The machinery is turned by a turbine wheel of 40-house power. There are six different machines entirely distinct from each other, viz.;—A planing and moulding machine, a large saw-bench, a small saw-bench, log frame, a deal frame, and a band-saw. The machinery was supplied by Messrs. Robinson & Son, of Rochdale.

THE ART EXHIBITION AT ALTON TOWERS.—An Art Exhibition will be opened at the commencement of July, at Alton Towers, Staffordshire, the seat of Earl Shrewsbury, as we have already announced. The purpose is to aid the funds for the erection of the Wedgwood Memorial, Burslem, a building intended to be "an experiment of Ceramic Architecture on a bold principle;" and it is proposed that it shall continue open for about three months. A gallery of modern architecture is to form a portion of the Exhibition, and offers of drawings from architects are being invited.

DOWLING'S "METRIC TABLES."—We are glad to see that Mr. Charles H. Dowling's "Metric Tables" (Lockwood & Co.), for converting British into metric measures and weights, and *vice versâ*, have been well approved in France. The *Moniteur* a short time since said,—"This work was completely wanting: having, at every instant, to convert into French measures English measures of every sort, and obliged to trust to the insufficient tables of our almanacs, we often felt discouraged. Thanks to Mr. Dowling, we shall never more be at a loss."

THE BONAPARTE MONUMENT IN CORSICA.—Prince Napoleon presided over the inauguration of the grand monument raised at Ajaccio to the memory of Napoleon Bonaparte and his family. The Emperor is on horseback, surrounded by his four brothers, and all are dressed in Roman costume. The equestrian statue is nearly 10 ft. high, and the others are about 7 ft. each. The base is raised more than 12 ft. above the level of the soil. The statues are cast in bronze furnished from cannon taken in the late Italian campaign; but two winged Victories, placed in the basement, are of marble. The entire monument is about 100 ft. in length and 25 ft. in height. The general arrangements were made by M. Viollet le Duc, and the sculpture was executed by MM. Barye, sen., Thomas, Jean Petit, Maillet, and Dubray.

FIELD-LANE RAGGED SCHOOLS AND NIGHT REFUGES FOR THE HOMELESS POOR.—On Tuesday last, the ceremony of laying the foundation-stone of a new building, for an increased and more efficient accommodation of the Field-lane Ragged Schools and Refuges, was performed by the Earl of Shaftesbury. The site of the new building is in Vine-street. It will command a frontage in Saffron-hill opposite the Italian Catholic church, and a still larger frontage in Vine-street itself, now called Hatton-wall. The building will consist of three main divisions—first, night refuges for men and women; second, a home for female servants; and, third, the ragged schools. In the night refuges there are waiting-rooms, lavatories, baths, and dormitories for 80 men and 90 women, with separate entrances. The servants' home will have living-rooms and sleeping-rooms; and the schools will consist of one large room 90ft. by 40ft., and capable of being divided into three departments for girls, boys, and infants. Mr. F. W. Porter is the architect, and Mr. W. Higgs the contractor. The tenders for the erection of the building will be found in another page.

ASSESSMENT OF THE BANK OF ENGLAND.—The *City Press* says the Bank of England has been assessed at the gross annual value of 47,000*l*. by the Assessment Committee of the City of London Union. The former assessment was something like a fourth of that sum; but the increased amount is considered by the committee to be strictly fair and equitable. We understand that the Bank authorities have given notice of appeal. Under the Union Assessment Committee Act, the rateable value of property in the City has been equalized. The disparity between the amount at which premises were previously assessed and the present value has in many instances been very great.

AN IMPROVEMENT IN IRON.—An improvement in iron, increasing greatly its tensile strength, is claimed by Mr. J. D. Williams, of Pittsburg. Tested at Fort Pitt, a specimen of wrought iron made by him was subjected to a strain of 166,900 lb. per square inch, without breaking, which is nearly twice the endurance of any iron ever tested, and is much greater than that of cast steel. The process of imparting this unexampled tenacity of strength to iron adds only two dollars per ton to its cost. If after facts justify this test, it will add nearly 150 per cent. to the strength of steam boilers, the thickness of plate being the same. Chains of equal tractile strength can be made of less than half the iron now used. For suspension bridges it will be invaluable. The improvement is chemical in its nature, and is applied in the boiling furnace. The iron of which the piece which was tested was made was principally anthracite pig, with a small quantity of charcoal iron.—*New York Paper.*

SASH WINDOWS.—A writer in *Notes and Queries* says,—Your correspondent, "A. A.," proves the use of this word as apparently *rare* in May, 1710. A reply to his note suggested that that term was derived from the Old English word *sasse*, a sluice; and *sas*, the Dutch, also for a sluice; the common French term for such a window being *à la guillotine*. The following note is, I venture to suggest, a very little, if at all, known assertion of the introduction of the window into France from England, and opens the question whether the invention was a Dutch or German one, and brought over with paint for house work, and sundry other building inventions, by the Dutch with William III.:—

"De Lorge: We had the good fortune here to find the marshall himself. He showed us his great *sash windows*; how easily they might be lifted up and down, and stood at any height; which contrivance, he said, he had out of England, by a small model brought on purpose from thence, there being nothing of this *poise* in windows in France before; the house was but building," and was situate near Montmartre.—*Lister*, "Journey to Paris," 8vo. London, 1699.

NEW IRON BRIDGE.—There has just been completed, in the yard of the Regent's Canal Ironworks Company, an iron bridge, which is the largest yet constructed on a system invented by Mr. A. Sedley. The *Society of Arts Journal* says,—The structure in question has been made to the order of the Indian Government, and is designed to be erected in India. The leading feature of the new principle is that, without the necessity of any subaqueous works, or the erection of any intermediate towers or piers, the bridge can be built to cross in a single span any river or chasm up to an extreme width of 500 yards, or 1,500 ft. The bridge just finished is of 75 ft. span and 14 ft. wide; its total weight is 22 tons, including the roadway, and it will support a nominal strain of four tons per sectional inch, but really a greater weight. Two great cantilevers, or wedge-shaped girders, are built up piece by piece till they are projected from opposite sides of the chasm or river which is to be bridged over, and extended till they approach within a distance something less than a third of the whole span. Across this space a central girder is thrown, which, while it completes the continuity of the bridge, acts, when fixed in position and riveted down, as the key-stone, so to speak. The wedge-shaped girders which project from either side of the stream are at their wide ends embedded and built into massive piers of masonry on the shores. The base of the wedge is fixed by iron tugs, in an upright position; the central arm of the girder supports the actual roadway of the bridge; the lower arm, stretching to the point of the girder, becomes a bracket support; and the upper arm passing over the summit of the upright end, which makes the thick end of the wedge, is extended backwards as a tension-bar, and anchored firmly in the earth, thus giving suspensory support to the central arm, which attains a perfect rigidity.

METROPOLITAN RAILWAY.—The number of passengers conveyed on the Metropolitan Railway on Whit Monday was 83,440. This is the largest number conveyed in one day since the opening of the line.

INTERESTING TO ANTIQUARIES.—The Rev. E. Kell lately exhibited at a meeting of the Literary and Photographical Society, Southampton, some curious specimens of ancient Roman workmanship, recently dug up from the site of an old Roman station near Andover. There have been great disputes as to the site of Vindomis, some antiquaries fixing it at Basingstoke and others at Silchester. Mr. Kell considers the site near Andover to be the true one. He has just discovered the site of a Mediæval glass manufactory in Western Hampshire.

BLASTING.—A noteable result of gunpowder blasting has been witnessed at the Colcerrow Granite Works, belonging to the Treffry estate, situated about one mile from Par station. The granite rock operated upon measured 56 ft. in length, 55 ft. in width, and 16 ft. in height. The hole was bored near the centre of the rock, about 16 ft. in depth, and charged with about 30 lb. of the "patent safety blasting powder," from South Down. The result was that the quantity of rock fairly disengaged is 3,520 tons. Scarcely any noise was made by the blast, although the rock was rent in the form of T, from top to bottom, and lifted as by a lever from its bed.

THE PUBLIC BUILDINGS OF WOLVERHAMPTON.—The Town Council have resolved to pull down the buildings at present used for the public offices in North-street, and erect a Town-hall, Sessions-house, Police-court, Police-barracks, Vestry-room, and Overseers' Offices, and other requisite public offices; and a committee already appointed are to "procure plans and estimates for such new buildings, and submit the same, with their opinion thereon, to the Council; such committee, in their advertisements for designs, being empowered to offer a premium of 100*l.* for the design which shall ultimately be selected as the best in the order of merit, and 50*l.* for the second best; the first premium to merge in the usual commission, in case of the author being employed to carry out the works." The contemplated cost will be about 12,000*l.*, exclusive of sale of premises.

METROPOLITAN FREE DRINKING FOUNTAINS.—In the poor and densely-populated parish of Shoreditch there were forty-five miles of streets and only one public drinking-fountain; and at the London Fields, where large numbers of the poorer classes are in the habit of assembling on Sundays and holidays, there was much need of a drinking-fountain. The committee of the Metropolitan Free Drinking Fountains Association have therefore erected two fountains in Shoreditch and one at the London Fields. The Fields fountain has now been opened. The first Shoreditch fountain also has been opened. A site was granted by the vestry at the corner of Chapel-street. This fountain is the ninety-first which has been erected in the metropolis by this Asso-tion, who greatly require the means of going on with their useful work, their funds being now completely exhausted.

THE METROPOLITAN BOARD OF WORKS.—At the usual weekly meeting, the Board opened tenders from persons desirous of contracting for carrying out the works of the Falcon Brook covering and diversion. There were six tenders—viz., from Mr. Buston, for 39,400*l.*; Mr. W. Moxon, 35,400*l.*; Messrs. Hill & Keddell, 37,850*l.*; Mr. Dethic, 39,430*l.*; Mr. T. Wainwright, 36,000*l.*; and Mr. Rixon, for 36,857*l.* The tender of Mr. W. Moxon for 35,400*l.* was accepted. The engineer reported the quantities of filling-in material supplied to the Thames Embankment, from the 9th December last to the 7th instant, to be as follows:—On No. 1 contract, 30,780 cubic yards of land stuff, and 86,109 cubic yards of river-dredged material; on No. 2 contract, 6,864 cubic yards of land, and 9,299 cubic yards of river-dredged material; total quantity from both sources, 132,882 cubic yards. In reference to Park-lane, the chairman observed, that the works proposed in the Bill which the Board promoted, involved an expenditure of 12,000*l.* or 15,000*l.*, whilst the widening of Park-lane proper (as proposed by the Parliamentary Bill which was lost in committee during the session) would have involved an expenditure of at least 150,000*l.* He considered it most important and necessary for the convenience of the public that that greatly overcrowded district should be relieved of its enormous traffic.

GAS.—The Harwich and the Woodbridge gas and coke companies have each declared a dividend of 8 per cent. per annum. The Market Harborough Gas Company have agreed to reduce the price of their gas from 5s. 6d. to 5s. The Melrose Gas Company have announced a dividend of 7½ per cent. per annum, and a reduction of 1s. 3d. in price.——Mr. Jaques, from the London Equitable Gas Company, has been appointed engineer to the Borough Gasworks, at a salary of 300*l.*, in the room of Mr. Leslie, C.E., who is now with the Crystal Palace Gas Company.

THE METROPOLITAN HOUSELESS POOR ACT.—The Act of Parliament to make perpetual the Metropolitan Houseless Poor Act, which received the Royal assent on Friday, has just been issued. The provisions in the former Act as to the period for relief are repealed. The Poor Law Board are to have the wards and other places of reception provided by the Act inspected, and may revoke and renew the certificate, and an allowance may be made by the Board for providing wards instead of a sum in respect to each pauper. "Any constable of the Metropolitan Police or one of the police of the city of London, may personally conduct any destitute wayfarer, wanderer, foundling, or other destitute person, not having committed or being charged with any offence punishable by law within the knowledge of such constable, to any wards or other places of reception approved by the Poor Law Board under the said Act or this Act, and every such wayfarer, wanderer, or foundling shall, if there be room in such wards or other places of reception, be temporarily relieved therein." The wards are to be opened for the relief of destitute persons between six in the evening and eight in the morning between October and March, and from eight o'clock in the evening till eight o'clock in the morning between April and September inclusive.

A HOME FOR APPRENTICES.—Mr. Hartley, of the Westminster Marble Works, in Earl-street, London, has founded a home for boys, who are taken as apprentices, and placed in a small house, in which a person resides connected with the works, who acts as a master; his wife is the superintending matron; and the control of these lads is placed in their hands. They are called in the morning to go to their work; they return at stated times to their meals, which are always ready for them. After the work is over there are books and newspapers for them to read, or occupation is found in writing and drawing. They are allowed full liberty of ingress and egress, being fined, however, if not in by a stated time, which varies according to the season, and they are allowed a small sum a week for pocket-money. They are thus placed in a position which must have a very material effect in qualifying them to fulfil their duties properly when arrived at manhood. The boys are taken at about thirteen or fourteen years old, and retained until twenty-one, at which age they ought to be able to take care of themselves, and make room for others. This institution is said to have been found exceedingly advantageous, not only as an industrial school, but to the master who has founded it; for, on a comparison made by Mr. Hartley of the loss sustained by him during a year, taking twelve boys of the Home and twelve apprentices living at their own homes, he found that the loss by absence amounted in the whole to but 11s. 3d. from the college boys; whereas, from the apprentices living with their parents, the loss on the same account exceeded 40*l.* during the same period.

TENDERS

For hunting-stables, farm buildings, and cottages, for Mr. S. T. Cooper, Bulwell Hall, near Nottingham. Mr. S. D. Walker, architect:—

A. & R. Dennett & Co. (accepted)	£2,250 0 0

For sundry additions and alterations to the residence of Mr. Samuel Smith, Woodberry Down, Stoke Newington, London. Mr. S. D. Walker, architect:—

Downs	£2,333 0 0
Higgs	2,237 0 0
Dawson	2,100 0 0
Sewell & Son	2,092 0 0
Wright	1,725 0 0
Simpson & Lynam*	1,720 0 0

* Accepted, with modifications.

For alterations and additions to 158, High-street, Camden-town. Mr. Thomas T. Green, architect. Quantities supplied:—

Manley & Rogers	£813 0 0
Scrivener & White	808 0 0
Stevenson	800 0 0
Palmer	790 0 0

For the Girls' Orphanage, at Bletchingly. Mr. E. W. Pugin, architect:—

Smith & Son	£8,800 0 0

For the Boys' Orphanage, at Hellingly. Mr. E. W. Pugin, architect:—

Wilson	£11,868 0 0

For additions to a house at Wimbledon, for Mr. R. J. McCabe. Messrs. C. W. & S. W. Lee, architects:—

Patrick & Son	£1,129 0 0
W. & R. Aviss*	1,092 0 0

* Revised tender of 980*l.* accepted.

For house, stabling, garden-walls, and entrance-gates, at Ravenscourt Park, Hammersmith, for Mr. L. Spain. Mr. J. Crawley, architect. Quantities supplied:—

Bywater	£3,247 0 0
Galsworthy	2,888 0 0
Hayward	2,800 0 0
Patman & Fotheringham	2,798 0 0
Cowland	2,680 0 0
Scrivener & White	2,500 0 0
Simpson & Son	2,444 0 0
Scott	2,442 0 0
Smith & Son	2,390 0 0

For building Field-lane Ragged Schools. Mr. F. W. Porter, architect:—

	Building.	Fittings.	Total.
Holland & Hannen	£9,030	£1,580	£10,610
Jackson & Shaw	9,100	1,495	10,595
Mansfield & Sons	8,900	1,499	10,399
I'Anson	8,850	1,540	10,390
Patman & Fotheringham	8,794	1,493	10,287
Sewell & Sons	8,595	1,560	10,155
Hayward	8,572	1,455	10,027
Coleman	8,200	1,520	9,720
Henshaw	8,022	1,550	9,572
Higgs	7,950	1,350	9,300

For building three houses, at Peckham-rye. Mr. H. Jarvis, architect:—

Colls & Son	£3,173 0 0
Jarrant	3,084 0 0
Marsland & Son	3,015 0 0
Sharpington & Cole	2,997 0 0
Piper & Wheeler	2,925 0 0
Henshaw (accepted)	2,834 0 0
Kynoch	2,625 0 0

For the proposed restoration of Sherfield Church, Berks. Mr. W. H. Woodman, architect. Quantities supplied:—

Budden	£1,305 0 0
Pritchard	1,299 0 0
Woodroffe	1,200 0 0
Wheeler, Brothers	1,160 0 0
Thomas	970 0 0

For twenty-three houses, at Wimbledon, for the Rev. Alfred Peache. Mr. James G. Smither, architect:—

Mitchell (accepted)	£4,795 0 0

For alterations to No. 220, Vauxhall Bridge-road. Mr. James G. Smither, surveyor to the estate:—

Cornish (accepted)	£422 0 0

For building new flour-mill, at West-end, Southampton, for Mr. John Gater. Mr. Charles Bowes, architect:—

Bull	£1,787 0 0
Stevens (accepted)	1,639 0 0
Sanders	1,437 0 0

For alterations, Ratcliff Workhouse. Mr. W. R. Kinipple, architect. Quantities not supplied:—

Macers	£970 0 0
Stone & Pierce	925 0 0
Ramsay	880 0 0
Kelly	817 0 0
Johnson	789 0 0
Curtis (accepted)	750 0 0

For a pair of semi-detached residences, Hornsey-rise. Mr. J. W. Reed, architect. Quantities supplied:—

King	£2,385 0 0
White	2,258 0 0
Lambel	2,230 0 0
Smith	2,200 0 0
Carlton	2,155 0 0
Ramsay	2,130 0 0
Hawkes	2,080 0 0

For erecting a beer-house and cottage adjoining, at Basingstoke, for Mr. Gardener. Mr. W. Smith, Architect:—

Musselwhite & Sons	£454 0 0
G. Charlton	400 0 0
Litchfield	368 15 0
Pritchard	350 0 0
Adams	350 0 0
F. Charlton	290 0 0

For erecting three cottages, for Mr. Hockley, Basingstoke, Hants. Mr. W. Smith, architect:—

Musselwhite & Sons	£474 0 0
Litchfield	400 15 0
G. Charlton	400 0 0
Pritchard	395 0 0
Adams	370 10 0
F. Charlton	260 0 0

For the erection of two shops and storehouse, for Messrs. McKenna, Swan-street, Manchester. Mr. Herbert E. Tijou, architect:—

Ward	£1,925 0 0
Farrell	1,802 0 0
Cochran	1,744 0 0
Davison	1,740 0 0
Thompson (John)	1,649 0 0
Thompson (Joseph)	1,618 0 0
Bowden & Edwards	1,447 0 0

For alterations and additions to St. Wilfrid's Roman Catholic Schools, Hulme, Manchester. Mr. Herbert E. Tijou, architect:—

Thompson	£1,486 0 0
Ledger	1,326 0 0
Davison	1,303 0 0
Ward	1,250 0 0
Harrison & Shaw	1,200 0 0